

2016-2535

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**United States Court of Appeals  
for the Federal Circuit**

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**LUFTHANSA TECHNIK AG,**  
*Plaintiff-Appellant*

v.

**ASTRONICS ADVANCED ELECTRONIC SYSTEMS CORP.,**  
*Defendant-Appellee*

**KID-SYSTEME GMBH,**  
*Defendant*

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Appeal from the United States District Court for the Western District of  
Washington, Case No. C14-1821-RSM

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**CORRECTED BRIEF OF PLAINTIFF-APPELLANT LUFTHANSA  
TECHNIK AG**

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**CERTIFICATE OF INTEREST**

Pursuant to Federal Circuit Rule 47.4, counsel for Plaintiff-Appellant Lufthansa Technik AG, certifies as follows:

1. The full name of every party represented by me in this case is:

Lufthansa Technik AG

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

N/A

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

Deutsche Lufthansa AG (100%)

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court (and who have not or will not enter an appearance in this case) are:

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## **TABLE OF ABBREVIATIONS**

The following abbreviations are used in this brief.

### ***Parties***

<b>Abbreviation</b>	<b>Term</b>
LHT	Plaintiff-Appellant Lufthansa Technik AG
AES or Defendant	Defendant-Appellee Astronics Advanced Electronic Systems Corp.

### ***Cites***

<b>Abbreviation</b>	<b>Term</b>
Appx ____	Joint Appendix at page(s) ____.
Appx ____: ____: ____	Joint Appendix at page ____:column ____:line(s) ____

### ***Terms***

<b>Abbreviation</b>	<b>Term</b>
Crane	U.S. Patent No. 5,621,256
The inventors	Henry Starke and Andrew Muirhead
The '016 Patent	U.S. Patent No. 6,016,016
Dr. Collins	Dr. Randolph Collins, expert for Lufthansa Technik AG
Mr. Bajzek	Mr. Thomas Bajzek, expert for AES

All emphasis is added throughout unless otherwise indicated.

### **STATEMENT OF RELATED CASES**

There is no other appeal in or from the same proceeding that was previously before this or any other appellate court. Pursuant to 28 U.S.C. § 1782, the parties litigated and appealed their respective applications for discovery in aid of a foreign proceeding related to the European counterpart of the asserted '016 Patent. *See Lufthansa Technik AG v. Astronics Corp.*, 553 Fed. Appx. 22 (2d Cir. 2014) (appeal concerning Lufthansa's request for discovery); *Astronics Advanced Elecs. Sys. Corp. v. Lufthansa Technik AG*, 561 Fed. Appx. 605 (9th Cir. 2014) (appeal concerning AES's request for discovery).

### **STATEMENT OF JURISDICTION**

The district court had jurisdiction under 28 U.S.C. §§ 1331 & 1338(a). On July 20, 2016, the district court issued an order granting summary judgment that the asserted claims of the '016 Patent are indefinite and dismissing with prejudice LHT's claims against AES. (Appx0029-0041.) On August 18, 2016, the district court entered judgment in favor of AES pursuant to Federal Rule of Civil Procedure 54(b). (Appx0042-0046.) On the same day, LHT filed an amended notice of appeal. (Appx1122-1124.) This Court has jurisdiction under 28 U.S.C. § 1295(a)(1).

### **PRELIMINARY STATEMENT**

The decision below is based on compounded errors of claim construction, indefiniteness analysis, and summary-judgment practice that led to a substantively erroneous and procedurally forbidden ruling. The asserted '016 Patent involves claims directed to a voltage supply apparatus that safely provides power to passengers' electrical devices (such as laptop computers) in aircraft cabins. LHT asserts that AES infringes various claims of the '016 Patent by making and selling its "Empower" voltage supply units. This appeal arises from the district court's erroneous grant of summary judgment of indefiniteness.

The appeal centers on the claim limitation reciting "the voltage supplying means operative to supply the supply voltage to the socket only if the time between

the detection of a first contact pin and the subsequent detection of a second contact pin of the plug does not exceed a predetermined maximum time value.” By detaching the terms “subsequent” and “time” from the surrounding claim language, the district court concluded that “subsequent” must have a temporal meaning and construed the claims to exclude simultaneous detection of two pins. This construction is contrary to the claim language which, read in context, demonstrates that simultaneous detection is plainly within the claim scope. The construction is also refuted by the specification—entirely ignored by the district court—which consistently uses the term “subsequent” to mean following in order of place or logic (rather than following in order of time). Moreover, the specification teaches that simultaneous detection is a preferred embodiment of the invention.

The district court also stated (wrongly) that “[t]here is ample evidence from the prosecution history to conclude that Lufthansa made a ‘clear and unmistakable disavowal’ of simultaneous detection in part to avoid the Crane patent.” In reaching that conclusion, however, the court did not provide any analysis of the prosecution history or the Crane patent. Indeed, the totality of the prosecution history demonstrates that the inventors amended the claims to clarify—not disavow—claim scope and did so at the examiner’s request. The inventors repeatedly stated that the amendments were intended to maintain coverage of simultaneous detection. Further, the inventors did not disclaim simultaneous

detection in view of Crane. Instead, the inventors explained that Crane teaches detecting only a single pin whereas the claims here require detecting both pins of a plug.

The district court compounded its claim-construction error by tersely concluding that its construction rendered the claims indefinite. In doing so, the district court turned the summary-judgment standard upside down by declaring that it was “free to interpret the opinions of the expert witnesses and reach its own legal conclusions.” That is wrong because “[a]ny fact critical to a holding on indefiniteness ... must be proven by the challenger by clear and convincing evidence.” *Cox Commc’ns, Inc. v. Sprint Commc’n Co.*, No. 2016-1013, 2016 WL 5335038, at \*3 (Fed. Cir. Sept. 23, 2016). And the law is well settled that “[c]redibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge, whe[n] ... ruling on a motion for summary judgment.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986). The court’s error is exacerbated because all of the competent evidence on indefiniteness—the intrinsic evidence, testimony from LHT’s expert Dr. Collins, testimony from AES’ engineers, and AES’ own expert declaration—establishes that skilled artisans would easily understand the claims with reasonable certainty. In fact, AES’ expert admitted that he never opined that the disputed limitation is indefinite. This Court should reverse.

### **STATEMENT OF THE ISSUES**

1) Did the district court erroneously construe the claims to exclude simultaneous detection of both pins of a plug by:

a) isolating the terms “subsequent” and “time” from the surrounding language even though the context of the claim language and the specification’s teachings (including a preferred embodiment) demonstrate that simultaneous detection is within the claim scope; and

b) concluding there was a “clear and unmistakable disclaimer” without analyzing the totality of the prosecution history, which establishes that the inventors amended the claims to clarify (not disavow) claim scope and the primary prior-art reference disclosed detecting only one pin rather than both pins, as required by the claims?

2) Based on its erroneous construction, did the district court improperly grant summary judgment of indefiniteness when the record evidence—including the claim language, the specification, expert testimony, and defendant’s own witness testimony—establishes that skilled artisans would understand the claim scope with reasonable certainty even if the claims do not cover simultaneous detection?



## **STATEMENT OF THE CASE**

### **A. THE PARTIES**

#### **1. Plaintiff-Appellant LHT**

LHT is the leading provider of maintenance and repair services for civil aircrafts. LHT designs repair programs to ensure the availability and reliability of aircraft fleets for nearly 800 customers worldwide. Through its many contributions to civil aviation, LHT is recognized as “an innovator in the field of aircraft equipment.” (Appx0002.)

As part of its research efforts, LHT develops numerous innovative products that improve passengers’ safety and flight experiences. Among those products is the patented voltage supply system covered by the ’016 Patent. The patented system safely delivers electrical power to outlets located by passenger seats so that passengers can use electrical devices, such as laptop computers or smartphones, during air travel. The patented system also interrupts the supply of electrical power when certain faults occur, such as short circuits or ground faults. (Appx0054:5:14-33.)

#### **2. Defendant-Appellee AES**

Defendant AES makes and sells voltage supply systems under the brand name Empower. These devices are installed on planes so that passengers can plug in and power their personal devices during flight. (Appx0191.)

## **B. THE ASSERTED '016 PATENT**

The '016 Patent, entitled “Voltage Supply Apparatus,” issued on January 18, 2000. (Appx0048-0056.) The '016 Patent is assigned to LHT and identifies Henry Starke and Andrew Muirhead as the inventors. (*Id.*) The '016 Patent has a priority date of May 31, 1997, when LHT filed a German patent application to protect its invention. The German application ultimately issued as European Patent No. 0881145B1. (Appx0902-0912.)

In 2010, LHT sued AES in Germany for infringement of European Patent No. 0881145B1. The German trial court held that AES’ accused Empower products infringe the European patent. The German patent court upheld the validity of the asserted claims. AES ultimately withdrew its appeal before the German Federal Supreme Court, and the validity of the claims is final and binding in Germany.

### **1. Technology Background**

The '016 Patent teaches a system that “provide[s] a voltage supply for electric devices in an aeroplane cabin [and] which improves passenger safety.” (Appx0052:1:42-44.) As the '016 Patent explains, designing a voltage supply system for use in an airplane cabin must satisfy two criteria: (1) passenger safety “has to be assured,” and (2) devices using the system “must not feed interferences into the electric on-board network of the aeroplane.” (Appx0052:1:18-23.)

At the time of the invention, the various voltage supply systems that attempted to satisfy these criteria suffered from several drawbacks. For example, some systems provided a “DC [direct current] voltage of up to 30 V” but had the “disadvantage ... that not every electric device can be operated with a low DC voltage.” (Appx0052:1:23-36.) Additionally, DC voltage supply systems required “special connection cables ... by [ ] which the electric device is connected to the socket.” (Appx0052:1:27-29.)

Other systems provided alternating current (“AC”) voltage but were inadequate because they required a “loose-key switch on the socket.” (Appx0052:1:30-35.) Consequently, passengers could not use the voltage supply without a “key [ ] supplied by the flight personnel.” (*Id.*) Moreover, the prior AC systems “neither ensured that the passengers are free from danger from the mains voltage [220/110 volts], nor is the aeroplane[’s] on-board network secured against interferences from the connected electric devices.” (Appx0052:1:35-39.)

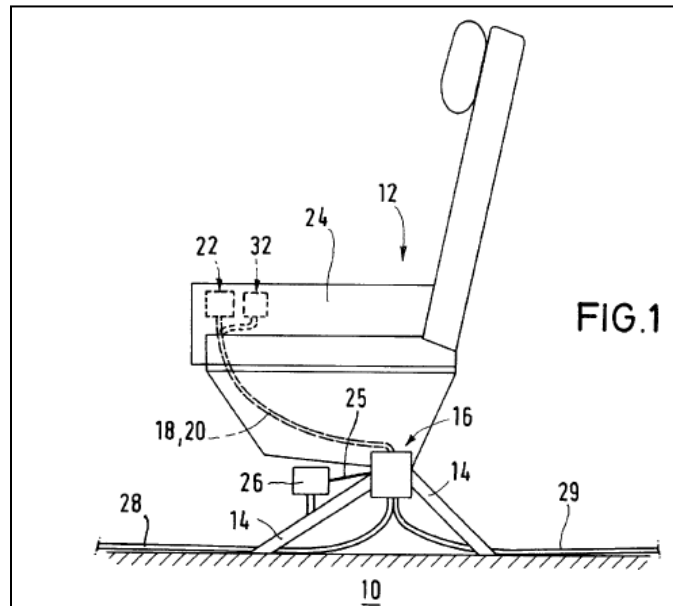
Importantly, the prior systems failed to address safety concerns that arise if passengers, especially small children, insert a foreign object, such as a needle or paperclip, into the socket resulting in an electric shock. (Appx0052:1:58-61.)

## **2. The Invention of the ’016 Patent**

Addressing the disadvantages of the prior art, the inventors conceived and claimed an apparatus for ensuring that “supply voltage is only available [ ] when a

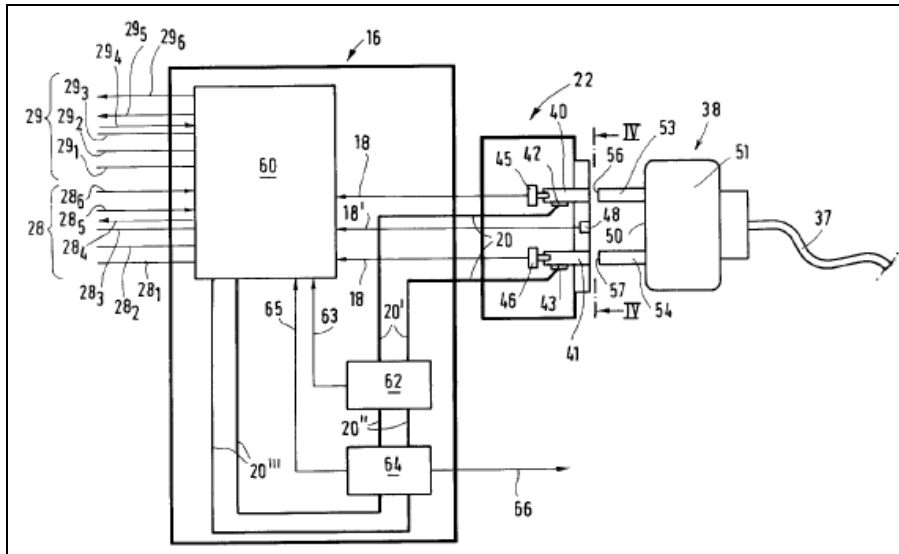
plug is inserted in the socket, i.e., no supply voltage is provided on the two-pole socket as long as no plug of an electric device is inserted.” (Appx0052:1:53-56.)

Figure 1 illustrates “a passenger seat 12 with a voltage supply apparatus for operating [the passenger’s] electric devices.” (Appx0053:4:6-7.)



The seat includes a supply device 16 that is “connected to a socket 22 in the left armrest 24 of the passenger seat 12 via a signal line 18 and a double-wire supply line 20.” (Appx0053:4:11-13.)

Figure 3 provides a detailed circuit diagram of the supply device 16 and socket 22. (Appx0053:3:64-65.)



The '016 Patent teaches that the invention requires detection of both pins (53, 54) of a plug (38) before any voltage can be supplied:

The socket 22 comprises *two corresponding insertion holes 40, 41 on the insides of which a respective contact element 42, 43 is arranged.* The contact elements 42, 43 are provided with a mains voltage of 110 V at a mains frequency of 60 Hz by the supply device 16 via two supply lines 20 once the safety conditions described below are met.

(Appx0053:4:34-40.) “When the two contact pins 53, 54 of the plug 38 are inserted into the insertion holes 40, 41 of the socket 22, the two contact pins 53, 54 are in contact with the contact elements 42, 43.” (Appx0053:4:55-59.)

In the “Summary of the Invention” section, the '016 Patent describes a preferred embodiment where the system supplies voltage when both contact pins are simultaneously detected: “Preferably, the supply device only applies the supply voltage to the socket *when two contact pins of the plug are detected simultaneously.*” (Appx0052:2:13-15.) This embodiment is advantageous because

*“[i]f both contact pins are detected simultaneously, it can be supposed with a high probability that no manipulation of the socket has occurred and that a plug really has been inserted. This way, an increased security against manipulation and undesired supply of the supply voltage to the socket is achieved.”*

(Appx0052:2:15-21.)

The '016 Patent further teaches that the disclosed system can supply voltage if the time between detection of the first pin and second pin does not exceed a predetermined maximum value:

In a preferred embodiment, the supply device only applies the supply voltage to the socket *when a maximum time of contact between the first detection of the first and second contact pins is not exceeded*. It is also checked if the two contact pins are inserted into the socket at approximately the same time. *In the case of too large a difference of time between the insertion of the two contact pins, it is assumed that the socket is being manipulated*. In this case, no supply voltage is applied to the socket so that a danger to a person is excluded.

(Appx0052:2:21-30.) As a result, the invention increases passenger safety because “[e]ven corresponding manipulations of the socket by children by means of paper clips, knitting needles etc. and dangers arising from this can be effectively prevented.” (Appx0052:1:58-61.)

The '016 Patent provides a detailed teaching to implement the invention for supplying voltage if the time between detection of the two pins is less than a predetermined value:

When the contact pins 53, 54 of a plug 38 of an electric device 36 are inserted, the microswitches 45, 46 are activated by the inserted contact pins 40, 41. *Between the first activation of the one contact switch 45 and that of the other contact switch 46*, a contact time is obtained by the control and supervision unit 60. If this contact time is below a maximum value, a corresponding enabling information is stored in the control and supervision unit 60.... If the reflection sensor signal and the enabling information are provided, the control and supervision unit 60 applies the supply voltage to the supply line 20 by means of an internal voltage switch....

(Appx0055:7:44-59.) Assuming other conditions are satisfied, “the control and supervision unit 60 applies the supply voltage to the supply line 20 by means of an internal voltage switch so that the contact pins 53, 54 are provided with mains voltage via the contact elements.” (Appx0055:7:57-61.)

### **3. The Asserted Claims**

The '016 Patent has one independent apparatus claim and 14 dependent claims. During litigation, LHT asserted claims 1-4 and 8-15. For purposes of this appeal, the relevant language of claim 1 recites:

A voltage supply apparatus for providing a supply voltage for an electric device comprising

a socket to which an electric device is adapted to be connected by means of a plug, means for supplying supply voltage to the socket,

the socket including plug detector means for detecting the presence of a plug inserted in the socket,

....  
....

and control means responsive to plug presence detection by said plug detector means for rendering the voltage supplying means operative to supply the supply voltage to the socket only if the time between the detection of a first contact pin and the subsequent detection of a second contact pin of the plug does not exceed a predetermined maximum time value.

(Appx0055:8:21-40.)

#### **4. The Prosecution History**

The priority application for the '016 Patent was filed in Germany on May 31, 1997, and the U.S. application was filed on May 28, 1998. (Appx0902; Appx0265.)

The U.S. application was originally filed with 16 claims. (Appx0251-0253.)

Examiner's First Office Action: On January 6, 1999, the examiner issued a first office action rejecting the originally-filed claims as indefinite and unpatentable under Section 103 in view of the prior-art Crane reference.

(Appx0298-0304.) Regarding Figure 2 in Crane, the examiner stated that the reference "discloses a socket 12 ... and supply device 20, 26, 24 so that if a plug is inserted in socket 12, latching relay 30 closes switch 34 and power is supplied from [the] supply device." (Appx0301.)

LHT's Response To The First Office Action: Responding to the first office action, LHT cancelled the originally-filed claims and added a new set of claims, including independent claim 17 and fourteen dependent claims. Claim 17 recited, in relevant part, a "voltage supply apparatus for providing a supply voltage for an electric device" comprising:



control means responsive to plug presence detection by said plug detector means for rendering the voltage supplying means operative to supply the supply voltage to the socket (a) only if two contact pins of a plug are detected simultaneously and (b) only if a maximum contact time is not exceeded between the detection of the first and second contact pins of the plug.

(Appx0311.)

In remarks accompanying the new claims, LHT noted that the indefiniteness rejections “are considered moot and are inapplicable to the newly drafted claims.”

(Appx0315.) Addressing obviousness, LHT explained that the examiner “broadly describes the operation of the circuit associated with the plug presences sensor 28” in the Crane reference, “but the specifics thereof is fully described at column 4 between lines 29 through 58.” (Appx0315-0316.) LHT then explained that Crane teaches detecting only a single pin of the plug and quoted Crane’s disclosure that:

The LED 36 and the photo-transistor 38 are positioned in the housing 16 to be on opposite sides of a path of movement *of one of the prongs* of a plug P being inserted in the outlet receptacle 12.

(Appx0316 (quoting from Appx1096:4:45-48).)

LHT explained that Crane “is silent as to any detection of contact pins of a plug ‘simultaneously,’ as is recited in limitation[] (a) of claim 17,” and further explained that “limitation (b) of claim 17 ... finds no counterpart” in Crane.

(Appx0316.) LHT noted that “limitations (a) and (b) taken conjunctively clearly distinguish claim 17” over Crane. (*Id.*)

Examiner's Final Office Action: On May 26, 1999, the examiner issued a final office action, which repeated the indefiniteness and obviousness rejections. On indefiniteness, the examiner stated that the claim language needed clarification because condition (a) in claim 17 was a subset of condition (b):

Condition “(a)” and condition “(b)” are not independent events or limitations so that it does not make sense to ‘and’ them. Condition “(a)” is a subset or special case of condition “(b).” If condition “(a)” is met and the two contact pins are detected simultaneously, then condition “(b)” is automatically met because the time between the detection of the first and second plugs is done in zero time which is less than any predefined “maximum contact time.”

(Appx0322-0323.) The examiner thus stated that “[a]ppropriate correction and clarification is required.” (Appx0323.)

On obviousness, the examiner did not dispute LHT's explanation that Crane teaches detecting only one prong of a plug. Rather, the examiner raised the same point regarding the overlap between conditions (a) and (b) as with the indefiniteness rejection:

[A]s demonstrated in paragraph 2 [discussing indefiniteness], limitations “(a)” and “(b)” are not separate limitations or events since if limitation “(a)” is met, then by definition, limitation “(b)” is automatically met, and in addition limitation “(a)” is a subset or special case of limitation “(b).” Therefore the “and” logic which requires both limitations makes no sense.

(Appx0324.) The examiner did not otherwise rely on Crane and did not specify or rely upon any features of the device disclosed in Crane other than the redundancy of conditions (a) and (b) of Claim 17.

LHT's Response To The Final Office Action: Addressing the examiner's request for clarification given his position that condition (a) is a subset of condition (b), LHT amended claim 17 as follows:

the voltage supplying means operative to supply the supply voltage to the socket [(a) only if two contact pins of a plug are detected simultaneously and (b)] only if [a maximum contact] the time [is not exceeded] between the detection of a first contact pin and the subsequent detection of a second contact [pins] pin of the plug does not exceed a predetermined maximum time value.

(Appx0327 (bracketing for deletions and underlining for insertions in original).) In the accompanying remarks, LHT made clear that claim 17 was amended by deleting condition (a) in order “[t]o avoid any mischaracterization of the invention or any misinterpretation of the claims and more specifically to remove the Section 112 rejection.” (Appx0328.) Based on the amendment, LHT noted that “the only remaining ‘condition’ is, in fact, the existence of [a] predetermined maximum time value between first contact pin detection and subsequent second contact pin detection.” (*Id.* (original emphasis).)

Turning to the obviousness rejection, LHT explained that “Crane [ ] *is absolutely silent* with respect to first contact pin and subsequent second contact pin detection with the time difference therebetween not exceeding a predetermined maximum time value.” (Appx0329.) Noting that “as interpreted by the Examiner, [Crane] discloses simultaneous detection,” LHT explained that Crane “cannot and

does not disclose or render obvious ‘subsequent detection’” of a second pin because Crane detects only a single pin. (Appx0329.)

In doing so, LHT’s response emphasized that the amendments to claim 17 were made to clarify the claims rather than to limit their scope. LHT expressly stated that “the intent of original claim 17 and that of present amended claim 17 *are one and the same.*” (Appx0330.) Indeed, LHT also made clear that “[i]n this context, claim 17 *is intended to cover exactly that intended originally* and, as now defined, the subject matter avoids [ ] Crane.” (*Id.*)

Notice of Allowability: Less than a week after receiving LHT’s amended claims and remarks, the examiner issued a notice of allowability. (Appx0332-0334.) Pending claim 17 ultimately issued as claim 1 of the ’016 Patent.

### **C. THE DISTRICT COURT PROCEEDINGS**

LHT filed this action on November 26, 2014, asserting that AES’ “EmPower” voltage supply units infringe claims 1-4 and 8-15 of the ’016 Patent. (Appx0003.) Following limited fact and expert discovery, the parties submitted opening claim-construction briefs on November 25, 2015, and responsive briefs on December 16, 2015. The district court held a *Markman* hearing on February 5, 2016.

#### **1. The District Court’s Claim-Construction Order**

The court issued its claim-construction order on April 25, 2016. (Appx0001-0020.) The court held that the ’016 Patent disclosed corresponding

structure for various means-plus-function terms in the asserted claims.

(Appx0008-0017.)

The court then turned to the term “subsequent detection” in the limitation reciting “only if the time between the detection of a first contact pin and the subsequent detection of a second contact pin of the plug does not exceed a predetermined maximum time value.” (Appx0017.) After spending two pages describing the parties’ arguments, the court provided a single paragraph in which it held that LHT had disclaimed coverage of simultaneous detection:

There is ample evidence from the prosecution history to conclude that Lufthansa made a “clear and unmistakable disavowal” of simultaneous detection in part to avoid the Crane patent. Even if the Court ignored that evidence, focused instead on the “subset” discussion in the prosecution history, and believed that Lufthansa removed “simultaneous” solely to remove the overlapping subsets, Lufthansa fails to explain why it not only removed the word “simultaneous” in the amendment, but added the word “subsequent.” .... Lufthansa’s interpretation of “subsequent” to have no temporal meaning in this claim ignores that the word “time” is found in the same sentence.

(Appx0019.) In the same paragraph, the court summarily concluded that the purported disclaimer rendered the claims indefinite:

Because the claim cannot be construed to cover simultaneous detection, AES is correct that the claim is left trying to cover an ambiguous range of time, and that one of ordinary skill in the art can only guess what is covered and what is not. Based on the language of the claim, the remainder of the patent, and the prosecution history, the Court finds by clear and convincing evidence that the claim language “subsequent detection” is indefinite.

(*Id.*)

Given that the district court's order *did not*: (1) evaluate the totality of the prosecution history; (2) analyze the claim language in proper context; (3) address the specification's teachings; (4) apply the controlling standard for indefiniteness; and (5) properly consider evidence establishing that the claims and specification described the invention with reasonable certainty, LHT moved for reconsideration and provided the court with additional expert testimony.

The district court denied LHT's motion on May 13, 2016. (Appx0021-0026.) The court repeated the boilerplate phrase that its indefiniteness conclusion was "based primarily on the language of the claim, the remainder of the patent, and the prosecution history." (Appx0023.) The court, however, did not identify or meaningfully discuss any of the intrinsic evidence. The court also stated that its indefiniteness conclusion rested on accepting AES' attorney argument "that 'the claim is left trying to cover an ambiguous range of time, and that one of ordinary skill in the art can only guess what is covered and what is not,' which in turn was quoted from AES' briefing and based on citations to the testimony of both expert witnesses." (Appx0023-0024.) Then, without providing any analysis of the expert evidence or conducting an evidentiary hearing, the court declared that it was "free to interpret the opinions of the expert witnesses and reach its own legal conclusions." (Appx0024.)

Regarding its conclusion of disclaimer, the court stated that “Lufthansa fails to convince the Court that ‘subsequent’ does not have a temporal meaning when used in the same sentence as the word ‘time.’” (Appx0025.) Again, the court did not provide any analysis of the terms “subsequent” and “time” within the context of the entire claim limitation nor did it analyze the specification or the entirety of the prosecution history.

## **2. The District Court’s Summary-Judgment Order Of Indefiniteness**

During a telephonic hearing on June 1, 2016, the court directed AES to file a motion for summary judgment and “indicated that it would not revisit its indefiniteness decision.” (Appx0032.) On July 20, 2016, the Court issued its summary-judgment order stating that “[g]iven the Court’s prior rulings, the Court now explicitly concludes” that the asserted claims are invalid as indefinite. (Appx0038.) The district court entered final judgment on August 18, 2016. (Appx0042-0046.) On the same day, LHT filed notices of appeal. (Appx1119-1121; Appx1122-1124.)

### **SUMMARY OF ARGUMENT**

The district court’s grant of summary judgment stems from several fundamental errors.

I.A. The court erroneously construed the asserted claims to exclude simultaneous detection of two pins. The court seized on the terms “subsequent”

and “time” divorced from the context of the surrounding claim language and determined that “subsequent” requires a temporal meaning such that the second pin must be detected after the first pin. However, when read in its entirety, the claim language establishes that “subsequent” refers to next in order of place or logic—*e.g.*, the first pin detection and the second pin detection requiring separate microswitches and signal lines (Appx0053:4:56-64)—not next in order of time. This understanding is confirmed by other examples in the specification, which consistently use the term “subsequent” to connote next in order of place or logic (such as referring to “subsequent passenger seats” and “subsequent supply lines”). The specification further teaches that simultaneous detection is a preferred embodiment of the invention, and other embodiments likewise encompass simultaneous detection by teaching that voltage will be supplied when the detection time is less than a predetermined maximum value. (*E.g.*, Appx0055:7:49-51.) Yet, the court never addressed the specification, let alone identified any persuasive evidence for excluding these embodiments.

I.B. The court also misapplied the prosecution history, summarily stating that there is “ample evidence ... that Lufthansa made a ‘clear and unmistakable disavowal’ of simultaneous detection in part to avoid the Crane patent.” (Appx0019.) The court, however, failed to analyze the totality of the prosecution history and the actual teaching of the Crane reference. The prosecution history is



devoid of any disavowal, much less evidence of clear and unmistakable disclaimer necessary to satisfy this Court’s “high” and “demanding standard.” Rather, a straightforward review of the prosecution history demonstrates that the inventors amended the claims to clarify—not alter—the claim scope at the examiner’s request for “[a]ppropriate correction and clarification.” (Appx0323.) Moreover, the inventors did not disavow any claim scope in light of the Crane reference. Instead, the inventors carefully explained that Crane teaches detection of only a single pin, whereas the claims require detection of both pins. Thus, Crane cannot, and does not, teach simultaneous detection of two pins. There was, therefore, no need or reason to disavow simultaneous detection of two pins.

II. The court perpetuated its claim-construction errors by concluding that its construction rendered the claims indefinite as a matter of law. The district court tersely determined that its construction excluding simultaneous detection rendered the claims ambiguous because simultaneous detection may require some non-zero time difference due to “tolerance” levels in detection equipment. The district court reached this conclusion by ignoring the intrinsic and extrinsic evidence showing that skilled artisans would understand the claims with reasonable certainty even under the erroneous construction. Instead, the court hinged its conclusion on the acceptance of AES’ attorney argument that “the claim is left trying to cover an ambiguous range of time, and that one of ordinary skill in the art can only guess

what is covered and what is not.” (Appx0023-0024.) The court exacerbated its error by declaring at the summary-judgment stage that it was “free to interpret the opinions of the expert witnesses and reach its own legal conclusions.” (Appx0024.)

Here, all of the competent record evidence on indefiniteness—including the claim language, specification, LHT’s expert testimony, AES’ expert declarations, and AES’ witness testimony—uniformly demonstrates that skilled artisans would understand the claim scope. The record includes a detailed analysis by LHT’s expert (Dr. Collins) demonstrating that skilled artisans would understand the claims with reasonable certainty, and AES’ expert (Mr. Bajzek) conceded that he offered no opinion of indefiniteness concerning the disputed limitation. Proper application of the indefiniteness test under the correct summary-judgment standard requires reversing the court’s judgment.

Accordingly, this Court should: (1) remand to the district court for infringement proceedings consistent with a construction that includes simultaneous detection of two pins; and (2) reverse or, at minimum, vacate the indefiniteness holding.

### **STANDARD OF REVIEW**

This Court reviews claim construction *de novo* as an issue of law when based on intrinsic evidence without underlying factual findings. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). This Court “review[s] the

application of prosecution disclaimer *de novo*.” *Shire Development, LLC v. Watson Pharmaceuticals, Inc.*, 787 F.3d 1359, 1365 (Fed. Cir. 2015). This Court reviews the grant of summary judgment of indefiniteness *de novo*. *Eidos Display, LLC v. AU Optronics Corp.*, 779 F.3d 1360, 1364 (Fed. Cir. 2015).

## **ARGUMENT**

### **I. THE DISTRICT COURT ERRONEOUSLY CONSTRUED THE CLAIMS TO EXCLUDE SIMULTANEOUS DETECTION OF CONTACT PINS**

Proper claim construction requires “read[ing] the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). Likewise, courts must assess “the totality of the prosecution history ... not the individual segments.” *Elkay Mfg. v. Ebco Mfg.*, 192 F.3d 973, 979 (Fed. Cir. 1999). Here, the district court violated these core principles by focusing on individual claim terms and snippets of the prosecution history while ignoring context and contrary intrinsic evidence. As a result, the court erroneously construed the claims to exclude simultaneous detection of contact pins.

The intrinsic evidence as a whole—including the surrounding claim language, the specification’s description of the invention, and the entirety of the

prosecution history—demonstrates that the claims properly cover simultaneous detection.

**A. Analyzed In Context, The Claim Language And Specification Establish That The Claims Encompass Devices That Supply Voltage When There Is Simultaneous Detection Of Contact Pins**

This Court “caution[s] that claim language must be construed in the context of the claim in which it appears. Extracting a single word from a claim divorced from the surrounding limitations can lead construction astray.” *IGT v. Bally Gaming Int’l, Inc.*, 659 F.3d 1109, 1117 (Fed. Cir. 2011). Yet that is precisely what the district court did here.

The key disputed limitation recites that:

the voltage supplying means [is] operative to supply the supply voltage to the socket only if the time between detection of a first contact pin and the subsequent detection of a second contact pin of the plug does not exceed a predetermined maximum time value.

(Appx0055:8:36-40.) Ignoring the surrounding claim language, the district court plucked the words “time” and “subsequent” out of their context and concluded that “subsequent” must have a temporal meaning because it “is found in the same sentence” as the word “time.” (Appx0019.) From this, the court concluded that the “claim does not include simultaneous detection.” (*Id.*) This construction is contrary to both the claim language and the specification.

The term “subsequent” always denotes a concept of order, be it following in order of place, following in order of logic, or following in order of time. (*See*

Appx1083-1084 ¶ 25 (quoting Webster’s Dictionary definition of “subsequent”).)

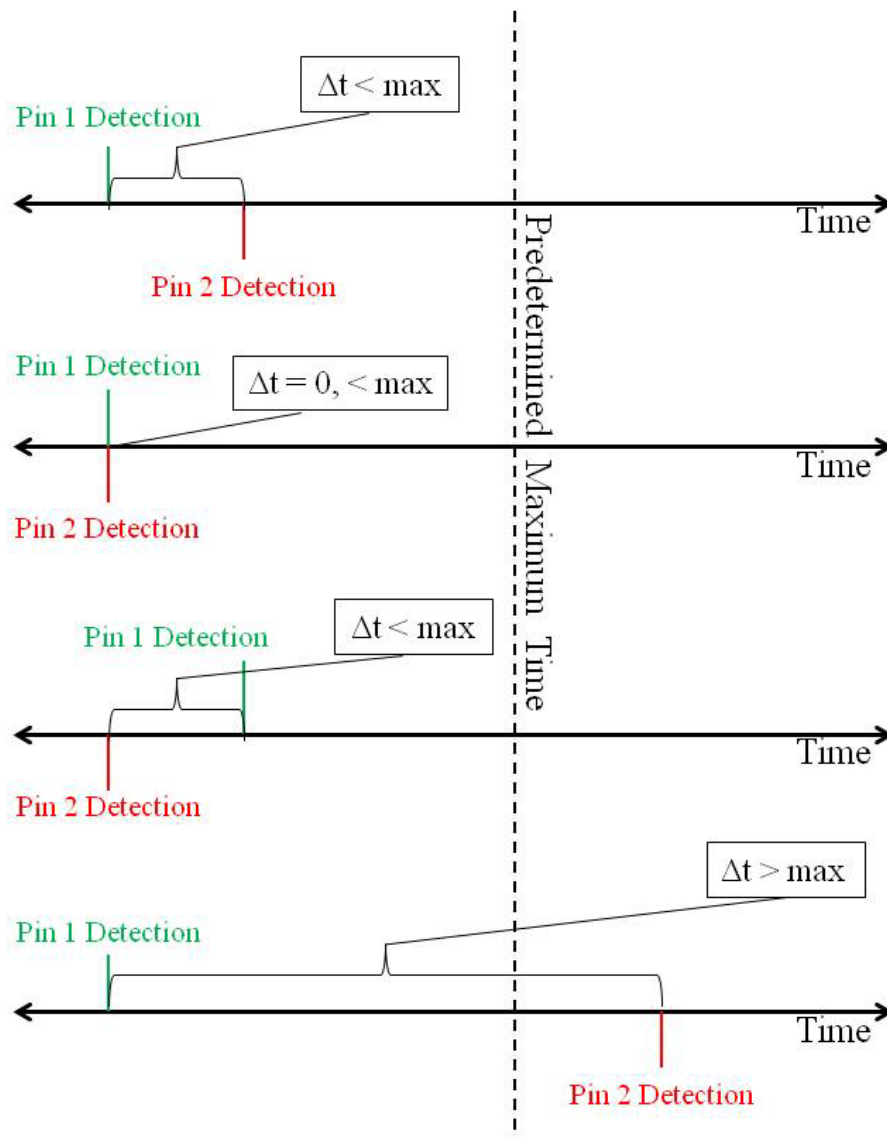
As with any claim term, the appropriate “ordinary meaning” is dependent on context based on the term’s usage in the claim language and specification. *See Phillips*, 415 F.3d at 1321. Here, the intrinsic evidence consistently uses the term “subsequent” to mean following in order of place or logic.

First, situating the terms “time” and “subsequent” in their proper context, the claim language demonstrates that the inventors used the term “subsequent” in an ordinal manner (following in order of place or logic, such as a first pin and a second pin) rather than a temporal manner (following in time). Claim 1 recites “detection of a first contact pin and the subsequent detection of a second contact pin.” (Appx0055:8:38-40.) Nothing in this language demands that the “subsequent detection” of a second pin must occur later in time. In fact, the term “subsequent” modifies “detection of a second contact pin,” it does not modify the word “time.” As this Court recognizes, “[m]odifiers should be placed next to the words they modify.” *HTC Corp. v. IPCOM GmbH & Co.*, 667 F.3d 1270, 1274 (Fed. Cir. 2012). Consistent with the ordinary meaning of “subsequent”— “[f]ollowing in order of place; succeeding; as, a subsequent clause in a treaty”— the claim uses the term to connote the order of pins in a multi-pin plug. (Appx1083-1084 ¶ 25 (citing dictionary providing both the quoted definition and an alternative definition of “following in time”).) Thus, “subsequent detection”

refers to the fact that there is a physical detection of a second contact pin, which can occur at the same time, earlier, or later in time as the detection of a first contact pin. The detection is “subsequent” because there is detection of two different pins accomplished by separate sensors and signal lines. (*E.g.*, Appx0053:4:56-54 & Fig. 3.)

Nor does the appearance of the word “time” in the claim language convert the term “subsequent” into a temporal limitation. Rather, the claim recites that voltage will be supplied “only if the time” between the two pin detections “does not exceed a predetermined maximum time value.” (Appx0055:8:38-40.) The claim language thus covers two independent detections of two different pins. The language is equally clear that the voltage supply is triggered if the two independent detections occur at any range of time between zero and a predetermined value. Read in context, the claim language nowhere requires that “subsequent detection” of a second pin must occur after detection of a “first contact pin.”

As shown by the illustration below, it is illogical to construe the claim language to exclude simultaneous detection of both pins because the claims recite an apparatus that supplies voltage so long as the time difference between the two detections is less than a predetermined maximum value, and, since zero is less than that maximum, it is necessarily included.



Second, the specification—which the district court’s opinion ignored—confirms that the inventors used the term “subsequent” to mean following in order of place or logic rather than following in order of time. Claims “must be read in view of the specification, of which they are a part.” *Phillips*, 415 F.3d at 1315. The specification “is always highly relevant to the claim construction analysis.

Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* In particular, “[w]here there are several common meanings for a claim term, the patent disclosure serves to point away from the improper meanings and toward the proper meanings.” *Brookhill-Wilk I, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1300 (Fed. Cir. 2003); *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 747, 752 (Fed. Cir. 2016) (“[T]he specification inform[s] the ordinarily skilled artisan as to precisely which ordinary definition the patentee was using.”). So too in this case. The specification consistently uses the term “subsequent,” to mean following in order of place or logic rather than following in time.

For example, the ’016 Patent twice describes “the supply device of a *subsequent* passenger seat.” The specification teaches that:

The supply device 16 is connected to a central voltage source 30 supplying multiple supply devices by means of an incoming supply cable 28 introduced into the supply device 16 (see FIG. 5). *The supply device 16 of a subsequent passenger seat* is connected by means of an outgoing supply cable 29 leading out of the supply device 16.

(Appx0053:4:21-26.) The specification similarly states that:

The supply device 16 is connected to the central voltage source 30 via the frontal supply cable 28 and *to a further supply device 16' of a subsequent seat* via the rear supply cable 29.

(Appx0054:6:38-41.) In both instances, the inventors used the word “subsequent” to mean following in order of place or logic. In fact, reading “subsequent” to have



a temporal meaning is illogical in the phrase “subsequent passenger seat.” *E.g.*, *AIA Eng’g Ltd. v. Magotteaux Int’l S/A*, 657 F.3d 1264, 1276 (Fed. Cir. 2011) (“We strive, where possible, to avoid nonsensical results in construing claim language.”).

Elsewhere, the ’016 Patent also teaches that the “output side of the short circuit detector 62 is connected to the contact elements 42, 43 of the socket 22 *via two supply voltage lines 20’ and via the **subsequent supply lines 20.***”

(Appx0054:5:11-14.) Accordingly, the ’016 Patent consistently uses the term “subsequent” to describe objects following in order of place or logic. The district court’s holding that “subsequent” must have a temporal meaning conflicts with the specification’s teachings.

The specification further refutes the district court’s construction by explaining in the “Summary of the Invention” section that simultaneous detection of contact pins is a preferred embodiment of the invention:

*Preferably*, the supply device only applies the supply voltage to the socket when two contact pins of the *plug are detected simultaneously*. If both contact pins are detected simultaneously, it can be supposed with a high probability that no manipulation of the socket has occurred and that a plug really has been inserted.

(Appx0052:2:13-18.) A “claim construction that excludes a preferred embodiment ... *is rarely, if ever*, correct and would require highly persuasive evidentiary support.” *Epos Techs. Ltd. v. Pegasus Techs. Ltd.*, 766 F.3d 1338,

1347 (Fed. Cir. 2014) (“[T]he district court’s construction is incorrect because it reads out preferred embodiments.”). No such evidence exists here, nor did the court identify or discuss any such evidence.

The court’s construction also conflicts with other embodiments (and the claim language), which teach that voltage will be supplied if the two detections of two independent pins occur before a predetermined time value: “If this contact time is below a maximum value, a corresponding enabling information is stored in the control and supervision unit 60.” (Appx0055:7:49-51; *see also* Appx0052:2:21-31.) The specification thus consistently reinforces the understanding that is clear from the claim language: the claimed apparatus supplies voltage if the time difference between the two detections is less than a predetermined maximum time, which necessarily includes simultaneous detection having a zero time difference. Yet the court’s construction contravenes these basic teachings.

This Court has long held that “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Phillips*, 415 F.3d at 1316 (quoting *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). LHT’s construction—requiring “that the time interval of the detection ranges from zero to a predetermined maximum time value inclusive of these two

end points” (Appx0017)—honors this rule by providing overall coherence with the intrinsic evidence. On the other hand, the district court’s construction is contrary to both the claim language and the specification.

**B. The Prosecution History Does Not Reflect Any Disclaimer, Much Less The Necessary “Clear and Unmistakable Disclaimer,” Of Simultaneous Detection**

In addition to misreading the claim language, the district court erred by concluding—in two brief sentences—that LHT disclaimed simultaneous detection during prosecution. (Appx0019.) Simply stating that “[t]here is ample evidence from the prosecution history to conclude that Lufthansa made a ‘clear and unmistakable disavowal’ of simultaneous detection in part to avoid the Crane patent” (*id.*), the court did not analyze any specific amendments or statements, let alone address the totality of prosecution history. That was legal error because when “dealing with an issue of law like claim construction,” courts “must [ ] furnish[] sufficient findings and reasoning to permit meaningful appellate scrutiny.” *OSRAM Sylvania, Inc. v. Am. Induction Techs., Inc.*, 701 F.3d 698, 707 (Fed. Cir. 2012).

Determining whether a disclaimer exists requires evaluating the “prosecution history *as a whole*,” *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335, 1343 (Fed. Cir. 2009), *amended on rehearing in part by* 366 Fed. Appx. 154 (Fed. Cir. 2009), which includes “the complete record of the proceedings before the PTO”

and “the prior art cited during the examination.” *Phillips*, 415 F.3d at 1317. Prosecution history disclaimer involves a “*high*” and “*demanding standard*,” *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016), and requires that the alleged “disavowal must ‘be both clear and unmistakable’ to one of ordinary skill in the art.” *Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007). “[A]n ambiguous disavowal will not suffice.” *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010). Accordingly, when an inventor’s statements are “amenable to multiple reasonable interpretations,” this Court “decline[s] to find prosecution [history] disclaimer.” *Avid*, 812 F.3d at 1045; *see Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1332 (Fed. Cir. 2004) (“[T]he statements in the prosecution history are subject to multiple reasonable interpretations, they do not constitute a clear and unmistakable departure from the ordinary meaning of the term.”).

Viewed in the totality of the prosecution history, LHT’s amendments and statements were made to clarify—not disclaim—claim scope. As a result, they fall far “short of the clear and unmistakable disavowal necessary for the doctrine of prosecution disclaimer to apply.” *Lazare Kaplan Int’l, Inc. v. Photoscribe Techs., Inc.*, 628 F.3d 1359, 1370 (Fed. Cir. 2010).

**1. The Inventors' Clarification Of The Claim Language Did Not Disavow Coverage Of Simultaneous Detection**

Not every amendment or statement during prosecution gives rise to a disclaimer. *See Schindler*, 593 F.3d at 1285 (disclaimer applies “only if [argument] is “clear and unmistakable”). To that end, amendments or statements made to clarify, but not alter, the scope of a claim do not constitute disavowal. *See, e.g., AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1242 (Fed. Cir. 2003) (“There was no indication that the amendment was made to relinquish claim scope; rather it was made in response to the examiner’s request to replace language that he found vague with language that he felt ‘more specifically defined’ the same material.”); *Interactive Pictures Corp. v. Infinite Pictures, Inc.*, 274 F.3d 1371, 1377 (Fed. Cir. 2001) (no estoppel when amendments “did nothing more than make express what had been implicit in the claim as originally worded”). That is precisely the case here.

During prosecution, LHT submitted independent claim 17 (which ultimately issued as claim 1) reciting, in relevant part, two conditions for voltage to be supplied:

the voltage supplying means [is] operative to supply the supply voltage to the socket (a) only if two contact pins of a plug are detected simultaneously and (b) only if a maximum contact time is not exceeded between the detection of first and second contact pins of the plug.

(Appx0311.) The examiner rejected claim 17 and the dependent claims as indefinite and obvious.

Regarding indefiniteness, the examiner stated that because condition (a) was a “subset” of condition (b), the claim language should be “clarifi[ed]”:

Condition “(a)” and condition “(b)” *are not independent events* or limitations so that it does not make sense to “and” them. Condition “(a)” *is a subset or special case of condition “(b).”* If condition “(a)” is met and the two contact pins are *detected simultaneously*, then condition “(b)” is automatically met because the time between the detection of the first and second plugs is done in *zero time which is less than any predefined “maximum contact time.”*

(Appx0322-0323.) The examiner clearly understood that simultaneous detection was necessarily part of condition (b) because “zero time [] is less than any predefined ‘maximum contact time,’” and simply required “[a]ppropriate correction and *clarification*” of the claim language. (Appx0323.)

At the examiner’s direction, LHT clarified the claim language by removing condition (a) and reciting:

the voltage supplying means operative to supply the supply voltage to the socket [(a) only if two contact pins of a plug are detected simultaneously and (b)] only if [a maximum contact] the time [is not exceeded] between the detection of a first contact pin and the subsequent detection of a second contact [pins] pin of the plug does not exceed a predetermined maximum time value.

(Appx0327 (bracketing for deletions and underlining for insertions in original).)

Accompanying the amendment, LHT explained “claim 17 has been amended to delete all reference to condition ‘a’” in order “[t]o avoid any mischaracterization of

the invention or any misinterpretation of the claims and more specifically to remove the Section 112 rejection.” (Appx0328.) Given that “simultaneous detection” was viewed as a subset of “maximum contact time,” the amended claims necessarily include devices that supplied voltage in the case of simultaneous detection because a zero time difference is less than a maximum contact time. LHT therefore made clear that devices supplying voltage based on simultaneous detection remained within the claim scope because clarified “claim 17 is *intended to cover exactly that intended originally*.” (Appx0330.) Continuing, LHT stated: “Thus, the *intent* of original claim 17 and that of present amended claim 17 *are one and the same*.” (*Id.*)

Under this Court’s precedent, “it must be clear and unmistakable that *the patentee intended*” to disavow claim scope. *Aria Diagnostics, Inc. v. Sequenom, Inc.*, 726 F.3d 1296, 1302 (Fed. Cir. 2013). Here, the prosecution history establishes the exact opposite: the inventors’ repeatedly stated their intent to clarify, rather than narrow, the claims. The inventors modified the claims to remove condition (a)—which included the term “simultaneous”—in order to harmonize the claim language with the examiner’s stated position that condition (a) “is a subset” of condition (b). In doing so, the inventors stressed that the amendment did not alter the claim scope because both the examiner and the inventors always understood simultaneous detection to be part of the claim. Rather, the amendment

underscores that the claims cover a system that supplies voltage if the time interval between detection of two pins—if any interval even exists—does not exceed a predetermined value. After the inventors’ amendment and remarks, the examiner allowed the claims without any further comment. (Appx0332-0334.)

Nor was there any reason for the inventors to disclaim simultaneous detection given that it is a central feature of the ’016 Patent. As explained above, the inventors described simultaneous detection of both pins as a “preferred” embodiment of the invention. The inventors also included simultaneous detection as part of other embodiments where voltage is supplied if the detection time is less than a predetermined value (which includes simultaneous detection).

The absence of a “clear and unmistakable” disclaimer in this case aligns with this Court’s precedent. *See, e.g., AK Steel*, 344 F.3d at 1241-42; *Interactive Pictures*, 274 F.3d at 1378 (“Because the amendment merely made explicit what had been implicit in the claim, the amendment was not made for a ‘substantial reason related to patentability’ and thus does not create prosecution history estoppel.”). In *AK Steel*, this Court construed the term “up to about 10% of silicon” to include the endpoint of 10% because the prosecution history demonstrated that an amendment adding the phrase “up to about 10%” was made to clarify the claims, rather than narrow them, in response to the examiner’s request. This Court explained that “the prosecution history shows that the phrase [up to about 10%]



was introduced into the claims *with the intention and effect* of covering the endpoint.... During prosecution, [ ] AK Steel amended th[e] claims to remove reference to Type 1 aluminum and to put in its place language expressing the ‘up to about 10% silicon’ language.” 344 F.3d at 1241-42. Based on the prosecution, this Court determined that “[t]here was no indication that the amendment was made to relinquish claim scope; rather it was made in response to the examiner’s request to replace language that he found vague with language that he felt ‘more specifically’ defined the same material.” *Id.* This Court held that “[u]nder those circumstances, the amendment clarified the claims without changing their scope.” *Id.*

The same reasoning and result apply here. Here, as in *AK Steel*, LHT amended the claims to clarify the language based on the examiner’s guidance to more particularly define the claims. And LHT made clear that the amendment was done with the intent of covering simultaneous detection.

## **2. The Inventors’ Discussion of The Crane Reference Did Not Constitute Clear and Unmistakable Disclaimer**

As with indefiniteness, the inventors’ response to the obviousness rejection fails to evince a “clear and deliberate disavowal” necessary for disclaimer. *Inline Plastics Corp. v. EasyPak, LLC*, 799 F.3d 1364, 1369 (Fed. Cir. 2015). On this issue, the district court’s opinion started and stopped with the statement that “Lufthansa made a ‘clear and unmistakable disavowal’ of simultaneous detection

in part to avoid the Crane patent.” (Appx0019.) Not so. The totality of the inventors’ statements viewed in light of Crane’s disclosure establishes that those “statements were not an unambiguous disavowal.” *Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1342 (Fed. Cir. 2012). The inventors’ distinction of Crane confirms that they did not disclaim any coverage of simultaneous detection of multiple pins of a plug.

During prosecution, the Examiner rejected the pending claims as obvious in view of Crane, stating that “Crane discloses a socket 12 and a plug detector 28 which detects the presence of a plug in socket 12 in order to provide power to a device.” (Appx0301.) In response, the inventors noted that the examiner “broadly describes the operation of the circuit associated with the plug presences sensor 28, *but the specifics thereof is fully described at column 4 between lines 29 through 58*” of Crane. (Appx0316.)

The inventors then directed the examiner’s attention to Crane’s passage starting at column 4, line 45, which makes clear that Crane teaches detecting only the “movement *of one of the prongs* of plug P being inserted in the outlet receptacle 12.” (*Id.*) As Crane itself states:

*In accordance with the invention*, the LED 36 and the photo-transistor 38 are positioned in the housing 16 to be on opposite sides of a path of movement *of one of the prongs* of a plug P being inserted in the outlet receptacle 12.

(Appx1096:4:45-48 (quoted at in the prosecution history at Appx0316.) Given Crane’s disclosure of detecting a single prong (pin), the inventors explained that the reference “is silent as to any detection of contact *pins* of a plug ‘simultaneously,’ as is recited in limitation (a) of claim 17.” (Appx0316.) Continuing to emphasize that Crane taught detecting only one pin, the inventors explained that “limitation (b) of claim 17 reciting ‘only if a maximum contact time is not exceeded between the detection of *first and second contact pins* of the plug’ finds no counterpart” in Crane. (*Id.*)

In a second office action, the examiner maintained the obviousness rejection in view of Crane for the same reasons as the indefiniteness rejection: that “limitation ‘(a)’ is a subset or special case of limitation ‘(b).’” (Appx0324.) Importantly, the examiner did not dispute that Crane disclosed detection of only a single pin. *See, e.g., Frans Nooren Afdichtingssystemen B.V. v. Stopaq Amcorr Inc.*, 744 F.3d 715, 719 (Fed. Cir. 2014) (holding no disclaimer because “even the examiner’s language regarding [prior art] does not clearly focus on the number of materials in what constitutes a filler”).

In response, the inventors explained that because Crane’s detection of a single pin, “*as interpreted by the Examiner*, discloses simultaneous detection, it cannot [ ] disclose or render obvious ‘subsequent detection.’” (Appx0329.) LHT again noted that given Crane’s detection of a single pin, the reference “is

absolutely silent with respect to first contact pin and subsequent second contact pin detection with the time difference therebetween not exceeding a predetermined maximum time value.” (*Id.* (original underline).) Understood in proper context, Crane’s detection of a single pin is fundamentally different from the claimed two independent detections of two pins with no time difference. *See Massachusetts Inst. of Tech. v. Shire Pharm., Inc.*, No. 2015-1881, 2016 WL 5939429, at \*8 (Fed. Cir. Oct. 13, 2016) (“In the context of the overall prosecution history, the isolated statements plucked from [a] declaration do not meet the high standard for prosecution disclaimer to attach.”). Accordingly, the entirety of the prosecution history demonstrates that while the inventors explained that the claims cover two detections of two different pins, they never stated (much less argued) that the detections must occur at different times.

Read in light of Crane’s disclosure of detecting a *single* pin, the inventors did not disclaim coverage of simultaneous detection of *two* pins. By adding the term “subsequent detection,” the inventors stressed that unlike Crane, the claimed invention detects two separate pins (and does so with separate detection elements). Accordingly, when, as here, “the inventors’ statements ‘are considered in the context of the prosecution history as a whole, they simply are not clear and unmistakable enough to invoke the doctrine of prosecution history disclaimer.’” *Digital-Vending Servs. Int’l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1277

(Fed. Cir. 2012); *see Frans Nooren*, 744 F.3d at 719 (no disclaimer when considering applicants’ statements in view of prior-art reference’s teachings); *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1331 (Fed. Cir. 2012) (no disclaimer given that prior-art “reference was not directed to the two-solvent solution of claim 5 but to a prior art three-solvent solution”); *Netcraft Corp. v. eBay, Inc.*, 549 F.3d 1394, 1401-02 (Fed. Cir. 2008) (no disclaimer “when the discussion of the [prior-art] reference is read in context with the Examiner’s prior statements”).

Moreover, as this Court instructs, any alleged disclaimer must be evaluated from the perspective of skilled artisans. *See Pall Corp. v. PTI Techs. Inc.*, 259 F.3d 1383, 1394 (Fed. Cir. 2001) (vacating summary judgment when “district court did not address the issue of what one skilled in the art would believe to have been excluded after reviewing the prosecution history as a whole”), *vacated on other grounds sub nom*, 535 U.S. 1109 (2002). Here, the expert testimony confirms that skilled artisans would understand that addition of the term “subsequent” underscored the fact that the claims cover detecting two pins whereas Crane detected a single pin. As Dr. Collins explained:

To a skilled artisan, the term ‘subsequent’ implies at least two pins, and Crane only teaches the detection of one pin. Even though the plug in Crane can have more than one pin, *Crane is only looking at one pin and acting on that pin, and there is no teaching regarding any aspect or detection of two pins.*

(Appx1087 at ¶ 37.) Dr. Collins further reasoned that the entirety of the prosecution history demonstrates that the “addition of the word ‘subsequent’ would be understood by a person of ordinary skill as simply clarifying that the patent was claiming a two-pin detecting system.” (Appx1085-1086 at ¶¶ 28, 30-34.) By contrast, AES’s expert offered a single paragraph on this issue that failed to place the inventors’ statements in proper context and never addressed Crane’s teachings. (Appx0462 at ¶ 38.) As a result, AES failed to carry its heavy “burden of proving the existence of a ‘clear and unmistakable’ disclaimer that would have been evident to one skilled in the art.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1063–64 (Fed. Cir. 2016) (explaining that “party seeking to invoke prosecution history disclaimer” bears burden of establishing disclaimer).

At minimum, Lufthansa’s interpretation of the prosecution history is reasonable and precludes prosecution disclaimer. As in this case, “[t]here is no ‘clear and unmistakable’ disclaimer if a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term.” *SanDisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1287 (Fed. Cir. 2005); *see Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1359 (Fed. Cir. 2003) (holding that statement “is amenable to multiple reasonable interpretations and it therefore does not constitute a clear and unmistakable surrender”). “Thus, when [LHT’s] statements are considered in the

context of the prosecution history as a whole, they simply are not clear and unmistakable enough to invoke the doctrine of prosecution history disclaimer.” *Ecolab*, 569 F.3d at 1343. In such circumstances, “because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Phillips*, 415 F.3d at 1317.

Moreover, the specification cements the correctness (and reasonableness) of Lufthansa’s interpretation that the term “subsequent” was added to reinforce that the claims cover detecting two pins rather than disclaiming simultaneous detection of two pins. As explained above in Section I.A, the specification consistently uses the term “subsequent” to mean in order of place or logic (a first pin and second pin), not next in time.

\* \* \* \*

For these reasons, this Court should reverse the district court’s construction and remand for infringement proceedings based on LHT’s construction providing that “the time interval of detection ranges from zero to a predetermined maximum value inclusive of these two end points.”

## **II. THE DISTRICT COURT ERRED BY GRANTING SUMMARY JUDGMENT OF INDEFINITENESS**

Predicated on its incorrect construction that the claims “cannot ... cover simultaneous detection,” the district court concluded that the claims are indefinite.

(Appx0019; Appx0038-0039.) Rather than analyzing the record evidence, the district court stated that it reached this conclusion by accepting

AES' argument that "the claim is left trying to cover an ambiguous range of time, and that one of ordinary skill in the art can only guess what is covered and what is not," which in turn was quoted from AES' briefing and based on citations to the testimony of both expert witnesses.

(Appx0031; Appx0023-0024; Appx0019.) Even if the court's construction were correct (it is not) that a zero time difference was disclaimed, this cursory sentence cannot support summary judgment of invalidity: "[B]oth this Circuit and the Ninth Circuit repeatedly have made clear that a trial court must at least provide its analysis and grounds for entering judgment somewhere in the record." *OSRAM*, 701 F.3d at 707. Nor can summary judgment be sustained by the stock statement that "[b]ased on the language of the claim, the remainder of the patent, and the prosecution history, the Court finds by clear and convincing evidence that the claim language 'subsequent detection' is indefinite." (Appx0019; *see Cutsforth, Inc. v. MotivePower, Inc.*, 636 Fed. Appx. 575, 578 (Fed. Cir. 2016) (vacating ruling when "[t]he majority of the Board's Final Written Decision is spent summarizing the parties' arguments and offers only conclusory analysis of its own"). Here, the district court never addressed, much less explained, why the claim language, examples in the specification, and expert testimony were insufficient to convey to skilled artisans the claim scope with reasonable certainty.



To warrant summary judgment of invalidity, AES carried the burden of showing that the undisputed evidence, viewed with all reasonable inferences drawn in LHT's favor, clearly and convincingly established that the "claims, read in light of the specification ... and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014). "Any fact critical to a holding on indefiniteness ... must be proven by the challenger by clear and convincing evidence," *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003). AES failed to carry this heavy burden, especially when the intrinsic evidence, expert testimony, and AES' own adjustments to the accused product demonstrate that skilled artisans would understand the claim scope with reasonable certainty.

**A. Even Under The District Court's Erroneous Construction, The Claim Language And Specification Provide Reasonable Certainty As To Claim Scope**

Section 112, ¶ 2 states that a patent shall "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as [the] invention." In *Nautilus*, the Supreme Court rejected the alternative "amenable to construction"/"insolubly ambiguous" standards and held that a claim is indefinite only if its language, when "read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform,

with reasonable certainty, those skilled in the art about the scope of the invention.”” *Nautilus*, 134 S. Ct. at 2124; *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015) (same).<sup>1</sup> The Supreme Court explained that the definiteness requirement does not demand “[a]bsolute precision [which] is unattainable.” *Nautilus*, 134 S. Ct. at 2129. Rather, “the certainty which the law requires in patents *is not greater than is reasonable*, having regard to their subject matter.” *Id.*; see *Source Search Techs., LLC v. LendingTree, LLC*, 588 F.3d 1063, 1076 (Fed. Cir. 2009) (rejecting assertion that term “goods or services” is indefinite because defendant’s position “would require the patent to list every possible good or service,” and this “court does not load the indefiniteness requirement with this unreasonable baggage”).

# **1. The Claim Language Provides Reasonable Certainty As To Claim Scope**

“As *Nautilus* instructs, the dispositive question in an indefiniteness inquiry is whether the ‘*claims*,’ *not particular claim terms*, ... inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Cox Commc’ns*,

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<sup>1</sup> Before *Nautilus*, certain cases articulated the indefiniteness standard in terms of the court’s ability to construe claims—insoluble ambiguity and amenability to construction. See *Praxair, Inc. v. ATMI, Inc.*, 543 F.3d 1306 (Fed. Cir. 2008); *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367 (Fed. Cir. 2004). Other cases, however, articulated the standard in terms of notice to skilled artisans. See *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008); *Honeywell Int’l, Inc. v. ITC*, 341 F.3d 1332, 1338 (Fed. Cir. 2003).

2016 WL 5335038, at \*4. The entirety of claim 1 does exactly that. The claim language clearly and distinctly states that voltage will be supplied “to the socket only if the time between detection of a first contact pin and the subsequent detection of a second contact pin of the plug does not exceed a predetermined maximum time value.” (Appx0055:8:37-40.)

The claim language on its face provides substantial guidance to skilled artisans. Even when read in view of the district court’s (erroneous) construction that excludes a zero time difference between detection of pins, the claims cover a range of time having a starting point at greater than zero and an ending point that includes a “predetermined maximum time value.” There is no basis in the patent or prosecution history supporting any disclaimer of something greater than a zero time difference, and the district court cited none. Simply put, the claimed system supplies voltage if the detection between pins is below a predetermined maximum amount of time. As such, “[t]here is no facial ambiguity or obscurity” in the claim language. *Ancora Techs., Inc. v. Apple, Inc.*, 744 F.3d 732, 738 (Fed. Cir. 2014); *see Augme Techs., Inc. v. Yahoo! Inc.*, 755 F.3d 1326, 1340 (Fed. Cir. 2014) (holding that claim “is clear on its face and unquestionably meets this [*Nautilus*] standard”).

Although the district court granted summary judgment by adopting AES’ argument that simultaneous detection of two pins may result in some non-zero time

due to the “tolerance” of detection equipment, that attorney argument cannot render the claims indefinite. “[T]he degree of precision necessary for adequate claims *is a function of the nature of the subject matter.*” *Biosig*, 783 F.3d at 1382. Accordingly, requiring claim language to account for the possibility of slight “tolerance” levels in detection equipment would engraft “a level of precision that exceeds the definiteness required of valid patents.” *Apple Inc. v. Samsung Elecs. Co.*, 786 F.3d 983, 1002-03 (Fed. Cir. 2015). And at minimum, whether skilled artisans could determine tolerance levels at the lower end of time range is a factual issue precluding summary judgment.

Moreover, this is not a case where the claim language uses “words of degree” or “subjective” terms. Contrary to the district court’s characterization, there is no “guess[ing]” required to ascertain the claim scope. In the claim language, the inventors clearly defined a range of time within which voltage will be applied. Having done so, the inventors were not required to specify numerical boundaries: “[A] patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).

## **2. The Specification Provides Reasonable Certainty As To Claim Scope**

Claims are definite when “a person of ordinary skill in the art, with the aid of the specification, would understand what is claimed.” *Biosig*, 783 F.3d at 1381.

Here, the specification confirms that the claims provide reasonable certainty as to their scope. The '016 Patent consistently teaches skilled artisans that voltage can be supplied when the time range between two detections is equal to or less than a preselected maximum value. The specification explains:

In a preferred embodiment, the supply device only applies the supply voltage to the socket *when a maximum time of contact between the first detection of the first and second contact pins is not exceeded*. It is also checked if the two contact pins are inserted into the socket at approximately the same time. In the case of too large a difference of time between the insertion of the two contact pins, it is assumed that the socket is being manipulated. In this case, no supply voltage is applied to the socket so that a danger to a person is excluded.

(Appx0052:2:21-31.) The '016 Patent further teaches that:

When the contact pins 53, 54 of a plug 38 of an electric device 36 are inserted, the microswitches 45, 46 are activated by the inserted contact pins 40, 41. *Between the first activation of the one contact switch 45 and that of the other contact switch 46, a contact time is obtained by the control and supervision unit 60. If this contact time is below a maximum value, a corresponding enabling information is stored in the control and supervision unit 60....* If the reflection sensor signal and the *enabling information are provided*, the control and supervision unit 60 applies the supply voltage to the supply line 20 by means of an internal voltage switch....

(Appx0055:7:44-59.) The specification teaches that the claimed apparatus compares the time difference between detections against the maximum predetermined value at the top end of the time range, it does not measure a time difference against the lower end of the time range.

Importantly, “this court measures indefiniteness according to an objective measure that recognizes artisans of ordinary skill are not mindless automatons.” *Source Search*, 588 F.3d at 1077. Here, the specification provides detailed teachings for skilled artisans to understand that voltage will be supplied if the contact time between the detection of each pin is less than a maximum value selected for the device. As AES’ own expert explained, skilled artisans would understand the specification of the ’016 Patent to “mean” that voltage can be supplied “at the exact same time or within a small tolerance value consistent with normal plug insertion.” (Appx0927 ¶ 39.)

Faced with analogous circumstances, this Court has consistently reversed summary judgments of indefiniteness. Most recently, this Court did so with regard to the term “processing system” because:

The specification discloses, as an embodiment of a “processing system,” the CCP and provides details about how it functions.... Notably, the specification provides certain algorithmic details ... and provides detail about how these queries are constructed... *These disclosures are sufficiently detailed such that, reading claim 1 in light of the specification, a person of ordinary skill in the art would understand claim 1’s requirement that the “method of operating a processing system ... process[es] the signaling message” ... with reasonable certainty.*

*Cox Commc’ns*, 2016 WL 5335038, at \*5. Similarly, in *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F.3d 1312 (Fed. Cir. 2015), this Court addressed claims directed to a medical clamp and explained that the definiteness requirement

“mandates only that one skilled in the art must be able to understand *which* pressures are relevant to the claims and *how* those pressures can be measured, so to discern the scope of the claimed average pressure range with reasonable certainty.” *Id.* at 1319 (original emphasis). This Court concluded that if “such an understanding of how to measure the claimed average pressures was within the scope of knowledge possessed by one of ordinary skill in the art, there is no requirement for the specification to identify a particular measurement technique.” *Id.*; *see also Eidos*, 779 F.3d at 1366-68 (reversing summary judgment because specification provided sufficient explanation to skilled artisans of how to make claimed “contact holes” in LCD displays).

The same reasoning and result applies here given the ’016 Patent’s teaching of how to implement embodiments that supply voltage when the detection time is less than a predetermined value. Indeed, AES’ expert acknowledged that skilled artisans would read the ’016 Patent with the understanding that there is a “small tolerance value consistent with normal plug insertion.” (A0462 ¶ 39.) Just as in *Cox Communications*, the “subsequent detection” term “does not render the claims indefinite because it does not prevent the claims, read in light of the specification and the prosecution history, from informing those skilled in the art about the scope of the invention with reasonable certainty.” 2016 WL 5335038, at \*6.

**3. Expert Testimony Confirms That Skilled Artisans Would Understand The Claim Scope With Reasonable Certainty**

*Nautilus* makes clear that “the certainty which the law requires [ ] is not greater than is reasonable, having regard to their subject-matter.” 134 S. Ct. at 2129. Here, both parties’ experts established that skilled artisans would understand the claim scope even if the claims do not cover simultaneous detection. LHT’s expert, Dr. Collins, explained that “[i]f the claim construction ruling means that the invention covers systems where the time difference is less than a predetermined maximum time value but also when that time difference is zero plus some recognized tolerance, one of ordinary skill in the art would still understand the ranges that are covered by the claims.” (A1088 ¶ 40.) Supporting his analysis, Dr. Collins produced several graphs demonstrating that a “skilled artisan would know to set the predetermined maximum time value at a point where the vast majority of legitimate plug insertions will result in power being supplied to the socket.” (Appx1089 ¶ 48; *see infra* II.B. (further discussing Dr. Collins’ analysis).)

Further, AES’ own expert conceded that skilled artisans would recognize a “small tolerance value consistent with normal plug insertion.” (A0462 ¶ 39.) In fact, AES’ engineers adjusted the operation of the accused products in view of potential tolerance levels. (Appx0915-0916:52:23-53:18.) And AES understood the claim scope, including the “subsequent detection” limitation, with sufficient certainty such that it advanced multiple invalidity and non-infringement



arguments, and offered constructions of the relevant claim terms. (Appx0118-0185.)

This Court’s most recent decision in *Biosig* is instructive. On remand from the Supreme Court, the defendant argued that this Court was “require[d]” to hold the term “spaced relationship” indefinite because the “intrinsic evidence point[s] in two opposite directions, leaving the claims’ boundaries ... fundamentally uncertain.” 783 F.3d at 1379. Rejecting that argument, this Court determined that “a skilled artisan would understand the inherent parameters of the invention as provided in the intrinsic evidence.” *Id.* at 1384. The same is true here given that the claim language, specification, and Dr. Collins’ expert testimony establish that skilled artisans would understand the claimed time range in view of tolerance levels.

#### **B. The Record Evidence Precludes Summary Judgment Of Indefiniteness**

The “definiteness inquiry trains on the understanding of a skilled artisan at the time of the patent application, not that of a court viewing matters *post hoc*.” *Nautilus*, 134 S. Ct. at 2130. To that end, courts frequently consider the extrinsic evidence to ascertain whether skilled artisans would understand the claims. *Id.* Here, even beyond the claim language and specification, the record evidence demonstrates that summary judgment should be reversed for several reasons.

First, the district court fundamentally misapplied the summary-judgment standard, stating that it was “*free to interpret the opinions* of the expert witnesses and reach its own legal conclusions.” (Appx0024.) That is reversible error. The definiteness requirement is a “question[] of law with underlying factual determinations.” *Green Edge Enters., LLC v. Rubber Mulch Etc., LLC*, 620 F.3d 1287, 1299 (Fed. Cir. 2010). As such, it was not the court’s province to resolve factual disputes between conflicting evidence at the summary-judgment stage. “Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge, whe[n] ... ruling on a motion for summary judgment.” *Anderson*, 477 U.S. at 255. Summary judgment is never appropriate where there are disputed issues of material fact. *T.W. Elec. Serv., Inc. v. Pac. Elec. Contractors Ass’n*, 809 F.2d 626, 631 (9th Cir. 1987) (“[I]f a rational trier of fact might resolve the issue in favor of the nonmoving party, summary judgment must be denied.”).

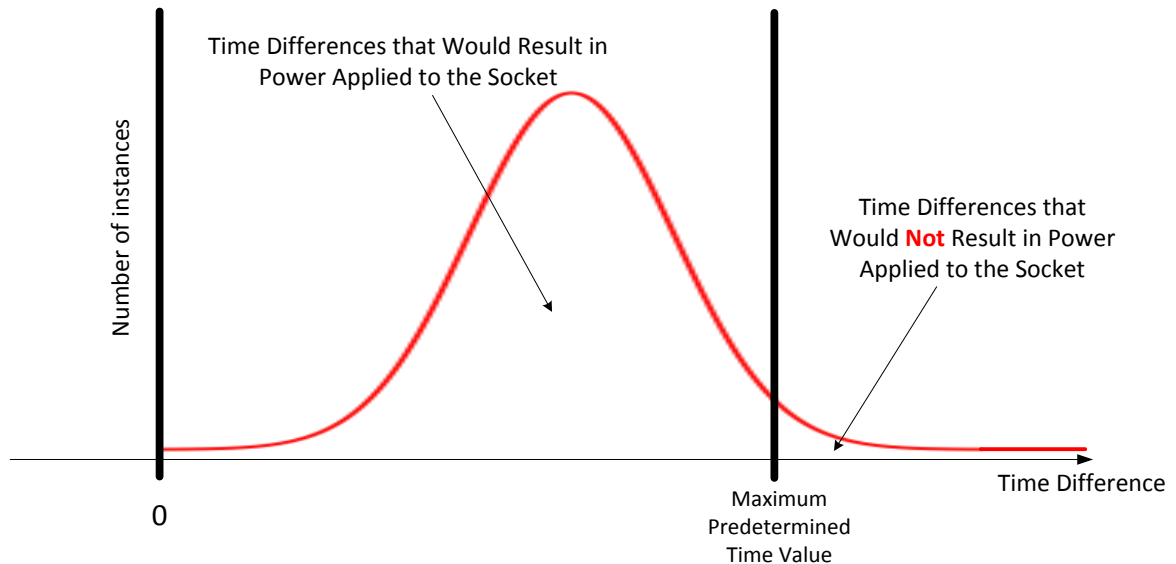
Here, LHT proffered extensive expert testimony demonstrating that skilled artisans would understand the claim scope with reasonable certainty. (Appx1005-1008 ¶¶ 98-106; Appx1079-1091; Appx1099-1102.) In such cases, a “conflict in [expert] declarations [ ] create[s] a genuine issue of material fact” that makes “summary judgment inappropriate.” *Metro. Life Ins. Co. v. Bancorp Servs., L.L.C.*, 527 F.3d 1330, 1338-39 (Fed. Cir. 2008); *Crown Packaging Tech., Inc. v.*

*Ball Metal Bev. Container Corp.*, 635 F.3d 1373, 1384 (Fed. Cir. 2011) (“Where there is a material dispute as to the credibility and weight that should be afforded to conflicting expert reports, summary judgment is usually inappropriate.”).

Second, the record evidence shows that, at minimum, there are genuine issues of material fact as to whether skilled artisans would understand the claim scope with reasonable certainty. As Dr. Collins explained, “[e]ven assuming that something more than exactly zero ... has been disclaimed ... it does not follow here that the remaining scope of the range is ambiguous.” (Appx1087-1088 ¶ 39.) Dr. Collins reasoned that if the claimed range of time includes a starting value that “is zero plus some recognized tolerance, one of ordinary skill in the art would still understand the ranges that are covered by the claims.” (Appx1088 ¶ 40.)

As part of his analysis, Dr. Collins provided various figures demonstrating that a “skilled artisan would know to set the predetermined maximum time value at a point where the vast majority of legitimate plug insertions will result in power being supplied to the socket.” (Appx1089 ¶ 48.) Dr. Collins explained that the “location of the outlet in the passenger seat area is typically under the armrest, console, or under the seat. Given this awkward location as well as potential variations in the triggering of the switches in the outlet unit, there will always or almost always be some time difference between the detection of the two pins.”

(Appx1088 ¶ 45.) To illustrate his analysis, Dr. Collins provided the following figure:



(Appx1089 ¶ 46.) Referring to this figure, Dr. Collins explained:

The graph plots the distribution of the instances of each time difference measured between the detection of the first pin and the subsequent detection of the second pin. The curve on the graph shows a possible distribution of such measured time differences. At the left end of the curve is zero, which is the case where there is no measured time difference between the detection of the first pin and the subsequent detection of the second pin. At the other end of the curve is largest measured time difference. *The predetermined maximum time value is denoted on the graph as a vertical line. As shown in this example, the majority of instances are less than the maximum predetermined time value.*

(Appx1089 ¶ 47.) Based on his analysis, Dr. Collins opined that skilled artisans would “know that if one were to set the predetermined maximum time value to a value that is within the small tolerance in the detection mechanism, the device simply would not function. Thus, one of ordinary skill would know that to make

the device function properly and reliably, the predetermined maximum necessarily has to be a number greater than the upper end of the tolerance range.” (Appx1090-1091 ¶ 52.)

AES’ own evidence confirms Dr. Collins’ analysis and opinions. AES’ engineer (Mr. Michael Mowry) explained that several of the accused Empower products initially used a predetermined maximum value of 50 milliseconds. (Appx0915:50:24-52:9.) AES, however, increased the value to 300 milliseconds given that the accused products were not working properly at the 50 millisecond value because the value was too close to the tolerance level. As AES’ witness testified:

Q. What’s the reason for [the] update to 300 [milliseconds] from 50 [milliseconds]?

A. It improves the customer experience.

Q. How does it improve the customer experience?

A. It’s easier for a customer to get power when they insert their plug.

....

....

Q. Were there customer complaints about the 50 [milliseconds] timing?

A. Yes.

Q. Do you recall the nature of those complaints?

A. The nature of the complaints were related to customer satisfaction. Customers were having difficulty getting power due to the location of the outlet units.

Q. The outlet units might have been low down and it was hard to get the plug in the right way to get the power?

A. Correct.

Q. And so the 300th seconds you’re saying is easier to get the plug in and still get power?

A. Correct.

(Appx0915-0916:52:23-53:18.) Simply put, AES had no difficulty adjusting the predetermined maximum value given the “tolerance” levels of detection devices. *See Ethicon*, 796 F.3d at 1318-19 (holding claims definite when defendant’s activities demonstrate understanding of claim language with reasonable certainty). Thus, AES’ own testimony corroborates Dr. Collins’ conclusion that under the *Nautilus* standard, “one of ordinary skill in the art would be able to easily and with reasonable certainty understand the scope of the invention, including the meaning of the term ‘subsequent detection,’ whether or not any disclaimer is applied.” (Appx1091 ¶ 54.)

Third, despite carrying the burden of adducing undisputed clear and convincing evidence of indefiniteness, AES offered *nothing* to contest LHT’s evidence. AES’ expert (Mr. Thomas Bajzek) conceded that he did not provide any opinion on whether the term “subsequent detection” is indefinite. (Appx0927 ¶ 40; Appx0976:146:19-147:24.) The most that Mr. Bajzek could say was that “the meaning of ‘subsequent detection’ in Claim 1 is [ ] unclear.” (Appx0927 ¶ 40.) During his deposition, Dr. Bajzek confirmed that usage of “unclear” in his report did not constitute an opinion on indefiniteness:

Q. [A]re you providing an opinion here that the term subsequent detection of Claim 1 is indefinite? You don’t say that, I’m trying to determine that.

- A. Same answer. When I used the word indefinite, it has a specific meaning ... that's why I'm not using indefinite [regarding the term "subsequent detection"], I'm using unclear.

(Appx0976:147:15-24.)

Whether a term is allegedly "unclear," however, is not the proper definiteness standard. The Supreme Court has emphasized that "[s]ome modicum of uncertainty" is permitted as the "price of ensuring the appropriate incentives for innovation." *Nautilus*, 134 S. Ct. at 2128. Indeed, presented with similar circumstances, this Court has affirmed judgment of no invalidity because defendant "*point[ed] to no evidence* showing that skilled artisans would find the [claim] element ... as lacking reasonable certainty in its scope." *Apple*, 786 F.3d at 1003. This Court has also "conclude[d] that the district court erred in granting summary judgment [of indefiniteness] without a proper evidentiary basis for its conclusion. The burden was on [defendant] to prove its case, and in the absence of evidence provided by technical experts ... there is a failure of proof."

*Elcommerce.com, Inc. v. SAP AG*, 745 F.3d 490, 506 (Fed. Cir. 2014), *vacated on other grounds*, 564 Fed. Appx. 599 (Fed. Cir. 2014) (en banc).

Even if "unclear" were somehow a proxy for indefiniteness, Mr. Bajzek's opinion still could not support summary judgment. Without providing any explanation or foundational analysis, Mr. Bajzek proffered a single sentence stating that "[b]ecause the '016 specification provides no guidance of what time

range ‘simultaneously’ is intended to cover, and because the claims were amended to exclude providing power to the outlet when the pins are detected ‘simultaneously,’ the meaning of ‘subsequent detection’ in claim 1 is equally unclear.” (Appx0927 ¶ 40.) This conclusory statement does not constitute clear and convincing evidence sufficient for summary judgment. An expert’s “*ipse dixit* statements ... cannot be enough to constitute clear and convincing evidence.” *Cephalon, Inc. v. Watson Pharms., Inc.*, 707 F.3d 1330, 1338 (Fed. Cir. 2013); *Schumer v. Lab. Computer Sys., Inc.*, 308 F.3d 1304, 1315-16 (Fed. Cir. 2002) (vacating summary judgment because “[e]vidence of invalidity must be clear as well as convincing” and “testimony is insufficient if it is merely conclusory”).

Finally, AES’ attorney argument that skilled artisans would have to “guess” as to the claim scope also cannot support summary judgment. “[P]atents are ‘not addressed to lawyers, or even the public generally,’ but rather to those skilled in the relevant art.” *Nautilus*, 134 S. Ct. at 2128. To that end, this Court has rejected indefiniteness challenges when a party offers nothing “[b]eyond [] conclusory statements and bald assertions.” *Source Search*, 588 F.3d at 1076. Likewise, in this case, AES’ attorney argument is no substitute for clear and convincing evidence. “Unsubstantiated attorney argument regarding the meaning of technical evidence is no substitute for competent, substantiated expert testimony. It does not, and cannot, support [AES’] burden on summary judgment.” *Invitrogen Corp.*



*v. Clontech Labs., Inc.*, 429 F.3d 1052, 1068 (Fed. Cir. 2005); *see Creative Compounds, LLC v. Starmark Labs.*, 651 F.3d 1303, 1312 (Fed. Cir. 2011) (“It is well established that conclusory statements of counsel or a witness that a patent is invalid do not raise a genuine issue of material fact.”).

\* \* \* \*

The record is devoid of any evidence that skilled artisans would not know with reasonable certainty the starting and ending points of the time range for supplying voltage. In fact, the record evidence uniformly establishes the opposite—skilled artisans would easily understand the claim scope with reasonable certainty. At a minimum, whether skilled artisans could determine tolerance levels on the lower band of the claimed time range is a factual issue that cannot be resolved at summary judgment based on the record below. Accordingly, this Court should reverse the indefiniteness holding or, at minimum, vacate and remand for proper analysis.

### **CONCLUSION**

For these reasons, this Court should reverse the district court’s claim construction and grant of summary judgment.

Dated: November 7, 2016

Respectfully submitted,

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**CERTIFICATE OF COMPLIANCE**

1. This brief complies with the type-volume limitations of Federal Rule of Appellate Procedure 32(a)(7)(B) because it contains 13,876 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii) and Federal Circuit Rule 32(b).

2. This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Office 2007 in Times New Roman 14 pt.

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**CERTIFICATE OF SERVICE**

I hereby certify that on November 8, 2016, I served a copy of the foregoing  
on all counsel of record by CM/ECF.

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# **ADDENDUM**

UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

LUFTHANSA TECHNIK AG,

Plaintiff,

v.

ASTRONICS ADVANCED ELECTRONIC  
SYSTEMS CORP. and KID-SYSTEME  
GMBH,

Defendants.

Case No. C14-1821RSM

ORDER RE: CLAIMS CONSTRUCTION

**I. INTRODUCTION**

This matter comes before the Court on the parties' briefs regarding Claim Construction. Dkt. ## 62, 63, 81, 82. Oral argument was held on February 5, 2016, pursuant to *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995). Having reviewed the parties' briefing, and having considered the arguments and evidence presented in the *Markman* Hearing, the Court makes the following rulings regarding the patent claim terms at issue in this matter.

**II. BACKGROUND**

Plaintiff Lufthansa Technik AG ("Lufthansa") alleges infringement of United States Patent No. 6,016,016 ("the '016 patent") by Defendant Astronics Advanced Electronic Systems

ORDER RE: CLAIMS CONSTRUCTION - 1

1 (“AES”).<sup>1</sup> Lufthansa, in addition to being associated with other aspects of civil aviation, is also  
2 an innovator in the field of aircraft equipment. Dkt. #62 at 12. The inventions of the ’016  
3 patent were conceived by two Lufthansa employees, Andrew Muirhead and Henry Starke. *Id.*  
4 at 13. On May 31, 1997, the inventors filed an initial patent application in Germany, ultimately  
5 leading to European Patent No. 0881145. *Id.* On May 28, 1998, the inventors filed the  
6 application that became the ’016 patent in the United States. *Id.*

8 The patent claims at issue are directed to an aircraft power outlet system that “applies...  
9 voltage to the socket when the plug detector signals the presence of a plug.... i.e., no... voltage  
10 is provided... as long as no plug of an electric device is inserted.” Dkt. #64-1 at 7 (JA5).<sup>2</sup> This  
11 “excludes a danger to people by a potentially high supply voltage in the socket when the socket  
12 is not used [or by] manipulations of the socket by children by means of paper clips, knitting  
13 needles etc...” *Id.* The system has a feature that detects the presence of the contact pins of a  
14 properly-inserted plug before allowing power to flow to the socket. The patent explains that  
15 when a plug is inserted, the free ends of the contact pins actuate two microswitches in the  
16 socket that detect the presence of a plug. JA6, 4:56-65. A “control and supervision unit”  
17 determines the time between the activation of one plug prong contact switch and that of the  
18 second contact switch. JA8, 7:46-49. If the contact time is below a pre-determined “maximum  
19 value,” the system allows power to flow to the socket via the supply lines. JA8, 7:49-51, 56-  
20 61. This so-called timing function restricts the supply of power to the outlet when the system  
21 detects a foreign object inserted into only one slot in the socket or if the time difference  
22 between detection of two inserted objects exceeds the pre-determined maximum time value.  
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28 <sup>1</sup> Lufthansa and AES are litigating this issue in Germany, with an appeal currently pending. Dkt. #62 at 12.

<sup>2</sup> Hereinafter, the Court will cite to the Joint Appendix submitted by the parties by referring to its internal page numbers, e.g. JA005. This Joint Appendix is available at Dkt. #64-1 through 64-3.

1 The invention includes other important safety features, e.g., if the system detects a fault or short  
2 circuit, the power is shut off. JA6, 3:12-14.

3 Lufthansa eventually “teamed up with Defendant KID-Systeme GmbH (“KID”) to  
4 commercialize the inventions of the ’016 patent.... [licensing] KID to practice the ’016 patent  
5 and its foreign counterparts, and KID’s SKYPower line of power outlet systems incorporate the  
6 patented inventions.” Dkt. #62 at 12.

8 Lufthansa filed its Complaint in this Court on November 26, 2014 and moved for leave  
9 to amend its Complaint and join KID as a Defendant (Dkt. #32) on September 8, 2015. Initial  
10 briefing on claim construction was filed by Lufthansa and AES on November 25, 2015 (Dkt.  
11 ##62, 63), with responsive briefing (Dkt. ##81, 82) filed on December 16, 2016. Oral  
12 argument occurred on February 5, 2016.

14 KID made an appearance on January 8, 2016, solely to contest jurisdiction and move to  
15 dismiss claims brought against it. See Dkt. ## 83, 97. KID has not submitted briefing on claim  
16 construction and did not participate in the *Markman* hearing. KID’s Motion to Dismiss is  
17 currently noted for April 8, 2016. Dkt. #108.

### 19 III. SUMMARY OF CLAIMS FOR CONSTRUCTION

20 The parties submitted a Joint Claim Construction and Prehearing Statement that  
21 identified disputed claim terms. Dkt. #47 at 2-7. The following are the relevant claims with  
22 disputed terms in bold:

23  
24 1: A voltage supply apparatus for providing a supply voltage for an  
25 electric device comprising a socket to which an electric device is  
26 adapted to be connected by means of a plug, **means for supplying**  
27 **supply voltage** to the socket, the socket including **plug detector**  
28 **means** for detecting the presence of a plug inserted in the socket,  
said **voltage supplying means** being provided remotely from the  
socket and being connected to the socket by a signal line and a  
supply line, the **voltage supplying means** being constructed and  
arranged for applying the supply voltage to the socket when the



1 plug detector means indicates the presence of a plug over the  
2 signal line to the **voltage supplying means**, the **plug detector**  
3 **means** being constructed and arranged to detect the presence of  
4 contact pins of a plug in the socket, and **control means** responsive  
5 to plug presence detection by said **plug detector means for**  
6 **rendering the voltage supplying means operative to supply the**  
7 **supply voltage to the socket only if the time between the**  
8 **detection of a first contact pin and the subsequent detection of**  
9 **a second contact pin of the plug does not exceed a**  
10 **predetermined maximum time value.**

11 2: The voltage supply apparatus as defined in claim 1 wherein the  
12 **plug detector means** includes mechanical switches activated by  
13 contact pins of a plug inserted into the socket.

14 3: The voltage supply apparatus as defined in claim 1 wherein the  
15 socket and the **voltage supplying means** are associated with a seat  
16 of an aircraft.

17 4: The voltage supply apparatus as defined in claim 1 including  
18 central voltage source **means for supplying supply voltage** to a  
19 plurality of **voltage supply means**, and said **control means** is  
20 constructed and arranged for cutting-off voltage of said central  
21 voltage source means.

22 12: The voltage supply apparatus as defined in claim 1 including  
23 **fault current detector means** for detecting fault current to which  
24 said control means is responsive.

25 13: The voltage supply apparatus as defined in claim 12 including  
26 voltage switch means for turning off the voltage supply if the fault  
27 current detector detects fault current.

28 14: The voltage supply apparatus as defined in claim 1 including  
**short circuit detector means** for detecting a short circuit to which  
said control means is responsive.

15 15: The voltage supply apparatus as defined in claim 14 including  
16 voltage switch means for turning off the voltage supply if the **short**  
17 **circuit detector means** detects a short circuit.

18 Defendant AES argues that the above terms are indefinite because they fail to disclose a  
19 definite structure, and because the term “subsequent” does not include simultaneous detection  
20 of a plug. AES also argues that Lufthansa disclaimed simultaneous detection. Plaintiff

1 Lufthansa is the patent holder in this action, and argues that the '016 patent discloses sufficient  
2 structure for each of the means-plus-function limitations, which are the majority of the above  
3 terms. For Claim 1, Lufthansa argues that it did not disclaim simultaneous detection and that  
4 the timing limitation is not indefinite.

#### 5 **IV. LEGAL AUTHORITY**

##### 6 **A. Claim Construction Principles**

7  
8 Patent claim construction is a question of law for the Court, even if the case is  
9 designated to go to a jury trial, but it may have underlying factual determinations that are now  
10 reviewed for clear error. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837, 190 L.  
11 Ed. 2d 719 (2015); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (en  
12 banc), *aff'd*, 517 U.S. 370, 116 S. Ct. 1384, 134 L. Ed. 2d 577 (1996). After the claims have  
13 been properly construed, the fact-finder will compare the claims to the allegedly infringing  
14 product or process. The comparison is conducted on an element-by-element basis.  
15

16 When interpreting claims, a court's primary focus should be on the intrinsic evidence of  
17 record, which consists of the claims, the specification, and the prosecution history. *Phillips v.*  
18 *AWH Corp.*, 415 F.3d 1303, 1314-17 (Fed. Cir. 2005) (en banc). The Court should begin by  
19 examining the claim language. *Id.* at 1312. Claim language should be viewed through the lens  
20 of a person of "ordinary skill in the relevant art at the time of the invention." *SanDisk Corp. v.*  
21 *Memorex Prods., Inc.*, 415 F.3d 1278, 1283 (Fed. Cir. 2005). A court should give the claim's  
22 words their "ordinary and customary meaning." *Phillips*, 415 F.3d at 1312-13 (quotation  
23 omitted). In construing a claim term's ordinary meaning, the context in which a term is used  
24 must be considered. *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003).  
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1 However, the claims “must be read in view of the specification, of which they are a  
2 part.” *Phillips*, 415 F.3d at 1315 (quoting *Markman*, 52 F.3d at 979. Additionally, the doctrine  
3 of claim differentiation disfavors reading a limitation from a dependent claim into an  
4 independent claim. See *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318,  
5 1324 (Fed. Cir. 2012). The specification can offer “practically incontrovertible directions  
6 about a claim meaning.” *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1288 (Fed. Cir. 2009).  
7 “When consulting the specification to clarify the meaning of claim terms, courts must take care  
8 not to import limitations into the claims from the specification.” *Id.* “[A]lthough the  
9 specification may well indicate that certain embodiments are preferred, particular embodiments  
10 appearing in the specification will not be read into claims when the claim language is broader  
11 than such embodiments.” *Tate Access Floors, Inc. v. Maxcess Techns., Inc.*, 222 F.3d 958, 966  
12 (Fed. Cir. 2000) (quotation omitted). “By the same token, the claims cannot enlarge what is  
13 patented beyond what the inventor has described in the invention.” *Abbott Labs.*, 566 F.3d at  
14 1288 (internal quotation omitted). “Likewise, inventors and applicants may intentionally  
15 disclaim, or disavow, subject matter that would otherwise fall within the scope of the claim.”  
16 *Id.* at 1288.

20 In addition to the specification, a court should consider the patent’s prosecution history,  
21 which consists of “the complete record of the proceedings before the PTO and includes the  
22 prior art cited during the examination of the patent.” *Phillips*, 415 F.3d at 1317. However,  
23 because the prosecution represents an “ongoing negotiation” rather than the “final product” of  
24 the negotiation, “it often lacks the clarity of the specification and thus is less useful for claim  
25 construction purposes.” *Id.* Consulting the prosecution history can, however, be helpful in  
26 determining whether the patentee disclaimed an interpretation during prosecution. *Research*  
27  
28

1 *Plastics, Inc. v. Federal Packaging Corp.*, 421 F.3d 1290, 1296 (Fed. Cir. 2005). “Under the  
2 doctrine of prosecution disclaimer, a patentee may limit the meaning of a claim term by making  
3 a clear and unmistakable disavowal of scope during prosecution.” *Purdue Pharma L.P. v.*  
4 *Endo Pharm. Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006); *see also Chimie v. PPG Indus., Inc.*,  
5 402 F.3d 1371, 1384 (Fed. Cir. 2005) (“The purpose of consulting the prosecution history in  
6 construing a claim is to ‘exclude any interpretation that was disclaimed during prosecution.’”).

7  
8 Although courts are permitted to consider extrinsic evidence, like expert testimony,  
9 dictionaries, and treatises, such evidence is generally of less significance than the intrinsic  
10 record. *Phillips*, 415 F.3d at 1317 (citing *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858,  
11 862 (Fed. Cir. 2004)). Extrinsic evidence may not be used “to contradict claim meaning that is  
12 unambiguous in light of the intrinsic evidence.” *Id.* at 1324.

13  
14 Means-plus-function claiming occurs when a claim term is drafted in a manner that  
15 invokes 35 U.S.C. § 112(f) (previously § 112, ¶ 6). *Williamson v. Citrix Online, LLC*, 792 F.3d  
16 1339, 1347-48 (Fed. Cir. 2015). Under this provision, an inventor may express a claim element  
17 “as a means or step for performing a specified function.” 35 U.S.C. § 112, ¶ 6. Means-plus  
18 function claims allow the inventor to claim his invention in terms of the function performed, as  
19 long as he discloses in the specification the structure that performs the associated function. *See*  
20 *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003).

21  
22 The court must first determine whether each term is a means-plus-function limitation.  
23 To guide this inquiry, the Federal Circuit loosely follows a rebuttable presumption: if the claim  
24 term “uses the word ‘means,’” it is presumed to be a means-plus-function limitation, but if the  
25 claim term does not use “means,” it is presumed not to be. *Williamson*, 792 F.3d at 1348. The  
26 ultimate determination, however, depends upon whether claim would be understood by persons  
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28

1 of ordinary skill in the art to give a sufficiently definite meaning for structure claimed. *Id.* In  
2 this case, the parties agree that certain terms are means-plus-function limitations.

3 Construction of means-plus-function limitations involves two steps. “First, the court  
4 must determine the claimed function. Second, the court must identify the corresponding  
5 structure in the written description of the patent that performs that function.” *Applied Med. Res.*  
6 *Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006) (citation omitted).  
7

8 “A patent is invalid for indefiniteness if its claims, read in light of the patent’s  
9 specification and prosecution history, fail to inform, with reasonable certainty, those skilled in  
10 the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct.  
11 2120, 2123 (2014). “Indefiniteness is a legal determination; if the court concludes that a  
12 person of ordinary skill in the art, with the aid of the specification, would understand what is  
13 claimed, the claim is not indefinite.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374,  
14 1381 (Fed. Cir. 2015) (citation omitted) (finding the challenged claim term not indefinite).  
15 Patents are presumed valid, and a challenger must prove invalidity by clear and convincing  
16 evidence. *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003). If a single  
17 claim limitation is indefinite, the entire claim is invalid.  
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19

## 20 **B. ‘016 Patent Terms for Construction**

### 21 *1. “Means for Supplying Supply Voltage”*

22 The first claim term in dispute is “Means for Supplying Supply Voltage.” Claim 1 of  
23 the ‘016 patent provides as follows:  
24

- 25 1. A voltage supply apparatus for providing a supply voltage for an electric  
26 device comprising a socket to which an electric device is adapted to be  
27 connected by means of a plug, **means for supplying supply voltage** to the  
28 socket...

1 JA8. The parties agree this is a means-plus-function claim term. Dkt. #47 at 1. Lufthansa  
2 asserts that the function is “providing voltage to the socket” and the structure is “circuit  
3 assembly having supply and signal lines, switches, and logic elements to receive and transmit  
4 internal and external signals and configured to activate the switches based upon those signals.”  
5 Dkt. #62 at 24. In contrast, AES argues that the function is “providing voltage to the socket  
6 when the plug detector means indicates the presence of a plug over the signal line to the voltage  
7 supplying means,” and the structure is not disclosed. Dkt. #63 at 19.

9 The Court agrees with Lufthansa that the function is “providing voltage to the socket,”  
10 consistent with the plain language of the claim. Dkt. #62 at 24; JA8. The Court agrees with  
11 Lufthansa that the structure is “circuit assembly having supply and signal lines, switches, and  
12 logic elements to receive and transmit internal and external signals and configured to activate  
13 the switches based upon those signals” based on the language of the specification. In a  
14 preferred embodiment, the voltage supplying means is described as “the supply device 16.”  
15 JA6, 4:11-26. The specification describes structures associated with supply device 16,  
16 including specifically numbered supply cables, signal lines, switches, and “control and  
17 supervision unit 60.” JA6-8. The Court concludes that a person of ordinary skill in the art,<sup>3</sup>  
18 reading the specification, would understand that the structure is a “circuit assembly having  
19 supply and signal lines, switches, and logic elements to receive and transmit internal and  
20 external signals and configured to activate the switches based upon those signals.” See JA147.

21 The Court next turns to AES’ allegation of indefiniteness. AES argues that supply  
22 device 16, as shown on Figure 3 of the ‘016 Patent, is a “Russian nesting doll,” i.e. “a black  
23 box containing three interconnected black boxes:” the “control and supervision unit 60,” “short

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28 <sup>3</sup> During the Markman Hearing, the parties agreed that a person of ordinary skill in the art would be at the least an electrical engineer with a college degree. Lufthansa stated that such a person would also need two years of experience working on aircraft systems, but argued that this issue is not dispositive in this case.

1 circuit detector 62,” and “line supervision detector 64.” Dkt. #63 at 20. AES argues that no  
2 circuit structures are disclosed for any of these boxes. *Id.* AES argues that “a patentee cannot  
3 skirt the Patent Act’s requirements by pointing to some structure that theoretically could  
4 perform the function, or arguing that one skilled in the art could look at the specification and  
5 design a structure to perform the claimed function,” citing *Biomedino, LLC v. Waters Techs.*  
6 *Corp.*, 490 F.3d 946, 953 (Fed. Cir. 2007) (“the inquiry is whether one of skill in the art would  
7 understand the specification itself to disclose a structure, not simply whether that person would  
8 be capable of implementing a structure.”). Dkt. #63 at 13. AES argues that *Biomedino* is  
9 dispositive. *Id.* at 18. In *Biomedino*, a case involving medical valves, the Federal Circuit  
10 upheld the lower court finding of invalidity for failure to disclose a structure, reasoning that “a  
11 bare statement that known techniques or methods can be used does not disclose structure.” 490  
12 F.3d at 953.

13  
14  
15 Lufthansa argues that the circuit diagrams of Figures 3 and 5 disclose circuitry, citing  
16 JA6, 3:64-65, 4:1-2; JA147, ¶ 57. Dkt. #62 at 27. In the alternative, Lufthansa argues that “an  
17 applicant is not required to disclose specific circuitry when one of ordinary skill would  
18 recognize the associated structures from the description in the specification.” *Id.* Lufthansa  
19 cites to *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1380 (Fed. Cir. 1999) as a  
20 case on point. In *Atmel*, the claim included the term “high voltage generating means.” The  
21 defendant argued that the structure disclosed was insufficient because the specification depicted  
22 the high-voltage generator circuit as a “black block,” without any detail as to what electrical  
23 components comprised that circuit. The district court granted summary judgment of invalidity,  
24 but the Federal Circuit reversed because the lower court failed to consider the knowledge of  
25 one skilled in the art. *Id.* at 1383. *Atmel* holds that, consistent with Federal Circuit precedent,  
26  
27  
28

1 “disclosure of structure corresponding to a means-plus-function limitation may be implicit in  
2 the written description if it would have been clear to those skilled in the art what structure must  
3 perform the function recited in the means-plus-function limitation.” *Id.* at 1380. Because the  
4 specification cited an article and the patentee’s expert “testified that this title alone was  
5 sufficient to indicate to one skilled in the art the precise structure of the means recited in the  
6 specification,” the Federal Circuit found the disclosure in the specification adequate. *Id.* at  
7 1382. Lufthansa also cites to *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338  
8 (Fed. Cir. 2008) for the proposition that a patent is not indefinite merely because the circuit  
9 element is shown as a “‘black box,’ i.e., nothing in the figures or text of the written description  
10 describes the details of its inner circuitry.... the absence of internal circuitry in the written  
11 description does not automatically render the claim indefinite.” Dkt. #81 at 6.<sup>4</sup> In Response to  
12  
13  
14 AES’s brief, Lufthansa argues that *Biomedino* is not dispositive or applicable, because:

15           The patent in *Biomedino* involved a mechanical device for filtering  
16           and removing harmful compounds from blood. The term at issue  
17           there was “control means,” but that term was used in a very  
18           different context from how it is used in the ’016 patent. There, the  
19           term apparently described some kind of mechanical valve for  
20           routing the flow of blood and fluids during the filtration and  
21           removal process. The patent stated that “known differential  
22           pressure equipment can be used to operate valves, known valving  
23           equipment may be used, or known control equipment may be  
24           used.” 490 F.3d at 951. The Federal Circuit found the disclosure in  
25           *Biomedino* insufficient, distinguishing it from the situation in  
26           *Atmel*, where the specification disclosed an article, the content of  
27           which was well known by skilled artisans in the field. *Id.* at 952.  
28           The ’016 patent is much more like the patent in *Atmel* than the one  
29           in *Biomedino*. Here, the specification discloses structures that a  
30           skilled artisan would recognize—for example, switches, supply  
31           lines, signal lines, and logic elements.

<sup>4</sup> Lufthansa also cites to two other cases for similar holdings. Dkt. #81 at 6 (citing *S3 Inc. v. nVIDIA Corp.*, 259 F.3d 1364, 1370-71 (Fed. Cir. 2001); *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1365-66 (Fed. Cir. 2003)).



1 Dkt. #81 at 7. Lufthansa supports their argument by citing to both parties' expert reports. *Id.*  
2 (citing JA144-160; JA271). Lufthansa's expert testified that a "person of ordinary skill in the  
3 art would understand that the switches themselves are elements of the circuitry that generate  
4 signals on the signal lines... [and] would not need any disclosure of specific switches or  
5 circuitry to understand the scope of the claims." JA150-51.  
6

7 The Court agrees with Lufthansa's analysis and Lufthansa's expert and concludes that  
8 the disclosed structures are sufficient under *Atmel*. This conclusion is based on the language of  
9 the patent itself, and to the extent necessary to establish how someone skilled in the art would  
10 interpret the structures being claimed, on both expert reports.  
11

12 2. "*Plug Detector Means*"

13 The next term in dispute is "plug detector means." The parties agree this is a means-  
14 plus-function claim term, and agree that the function is "detecting the presence of contact pins  
15 of a plug inserted in the socket." Dkt. #47 at 1, 3. Thus the only dispute is over the structure.  
16 Claims 1 and 2 of the '016 patent provide as follows:  
17

18 1. A voltage supply apparatus for providing a supply voltage for an electric  
19 device comprising a socket to which an electric device is adapted to be  
20 connected by means of a plug, means for supplying supply voltage to the  
21 socket, the socket including **plug detector means** for detecting the presence  
22 of a plug inserted in the socket...

23 ...the **plug detector means** being constructed and arranged to detect the  
24 presence of contact pins of a plug in the socket, and control means  
25 responsive to plug presence detection by said **plug detector means** for  
26 rendering the voltage supplying means operative to supply the supply  
27 voltage to the socket...

28 2. The voltage supply apparatus as defined in claim 1 wherein the **plug  
detector means** includes mechanical switches activated by contact pins of a  
plug inserted into the socket.

JA8 (emphasis added).

1 As with the previous claim term, AES argues that the structure of this term is indefinite.  
2 Dkt. #47 at 3. Lufthansa argues that the associated structure is “switches,” which are explicitly  
3 mentioned in claim 2 and described in the specification. *See* JA4, 2:31-34, JA6 4:42-45,  
4 JA7:44-49. AES again argues that the patent fails to disclose the circuitry needed to perform  
5 the function. Dkt. #63 at 21-22.

6  
7 Consistent with the Court’s ruling on the first disputed term and the testimony of  
8 Lufthansa’s expert, the Court finds that disclosure of such circuitry is not required for a person  
9 skilled in the art to understand this term. For these reasons previously stated, the Court finds  
10 that the structure is not indefinite, that the term “plug detector means” has the function of  
11 “detecting the presence of contact pins of a plug inserted in the socket” and its associated  
12 structure is “switches.”

13  
14 3. “Control means”

15 The next term in dispute is “control means.” The parties agree this is a means-plus-  
16 function claim term. Dkt. #47 at 1. Claims 1 and 4 of the ‘016 patent provides as follows:

17  
18 1. ...and **control means** responsive to plug presence detection by said plug  
detector means...

19  
20 4. ...and said **control means** is constructed and arranged for cutting-off  
voltage of said central voltage source means.

21 JA8 (emphasis added).

22 Lufthansa argues that the function is “[r]endering the voltage supplying means  
23 operative to supply voltage to the socket.” Dkt. #47 at 3. AES argues that the function is  
24 “[r]endering the voltage supplying means operative... only if the time between detection of a  
25 first contact pin of a plug and the subsequent detection of a second contact pin of the plug does  
26 not exceed a predetermined time interval.” *Id.* The parties agree on a second function, cutting  
27  
28

1 off voltage. Dkt. #47 at 6. Lufthansa argues that the corresponding structure is “logic elements  
2 to receive and transmit internal and external signals and configured to activate switches based  
3 upon those signals.” *Id.* at 4. As with the previous term, AES argues that the structure is  
4 indefinite. *Id.*

5 Lufthansa argues that AES’ function is reading in a superfluous “when” limitation.  
6 Dkt. #62 at 29. AES argues that this “when” limitation is explicitly part of the claim, and that  
7 “courts routinely find that when a claimed function occurs is a crucial part of the limitation.”  
8 Dkt. #63 at 15 (citing cases from several district courts). Lufthansa argues that “the control  
9 means function is not limited to the specific conditions that AES seeks to impose, nor has AES  
10 ever argued that the structure would be different if their proposed function were adopted as  
11 opposed to [Lufthansa’s].” Dkt. #81 at 11 n.3. Lufthansa argues that the structure is disclosed  
12 in the specification:  
13  
14

15           Between the first activation of the one contact switch 45 and that  
16           of the other contact switch 46, a contact time is obtained by the  
17           control and supervision unit 60. If this contact time is below a  
18           maximum value, a corresponding enabling information is stored in  
19           the control and supervision unit 60.... the control and supervision  
20           unit 60 applies the supply voltage to the supply line 20 by means  
21           of an internal voltage switch so that the contact pins 53, 54 are  
22           provided with mains voltage via the contact elements 42, 43.

23 Dkt. #62 at 30 (citing JA8). AES again argues that there is no structure identified in the patent,  
24 instead there is just a “generic, blank box.” Dkt. #63 at 16.

25 Consistent with the Court’s ruling on the first disputed term, the Court finds that  
26 disclosure of circuitry is not required for a person skilled in the art to understand this term. The  
27 Court further finds that AES is impermissibly attempting to read an extra, unsupported  
28 limitation into the function of these terms. *See Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d  
1314, 1322 (Fed. Cir. 2003). For these reasons, the Court finds that the structure is not

1 indefinite, that the term “control means” has the function of “rendering the voltage supplying  
2 means operative to supply voltage to the socket” and its associated structure is “logic elements  
3 to receive and transmit internal and external signals and configured to activate switches based  
4 upon those signals.”

5  
6 4. “*Fault current detector means*” and “*short circuit detector means*”

7 The next terms in dispute are “fault current detector means” and “short circuit detector  
8 means.” The parties agree these are means-plus-function claim terms. Dkt. #47 at 1. Claims  
9 12, 14 and 15 of the ‘016 patent provides as follows:

10 12. The voltage supply apparatus as defined in claim 1 including **fault**  
11 **current detector means** for detecting fault current to which said control  
12 means is responsive.

13 14. The voltage supply apparatus as defined in claim 1 including **short**  
14 **circuit detector means** for detecting a short circuit to which said control  
means is responsive.

15 15. The voltage supply apparatus as defined in claim 14 including voltage  
16 switch means for turning off the voltage supply if the **short circuit detector**  
17 **means** detects a short circuit.

18 JA9 (emphasis added).

19 The parties disagree about the function of these terms. Lufthansa argues that the  
20 function of the fault current detector means is “detecting fault current,” and the function of the  
21 “short circuit detector means” is “detecting a short circuit or overload.” Dkt. #47 at 6-7. AES  
22 argues that the function of the fault current detector means is “detecting fault current to which  
23 said control means is responsive,” and the function of the short circuit detector means is  
24 “detecting a short circuit to which the control means is responsive.” *Id.* Lufthansa argues that  
25 the structures for these terms are, respectively, “circuit configured to determine the difference  
26 of the current flowing in the outlet supply lines and transmit a signal,” and “circuit configured  
27  
28

1 to determine if the current flowing in the outlet supply lines is excessive and transmit a signal.”

2 *Id.* As with the previous claim term, AES argues that the structure for these terms are  
3 indefinite. *Id.*

4 Lufthansa argues that AES again tries to read an extra limitation into the function that  
5 requires “not only detection of a fault current or short circuit, but also requires that the control  
6 means is responsive to the detection.” Dkt. #62 at 32. AES argues that omitting this limitation  
7 is improper “because, as the Patent claims, the signals generated by these detectors are sent to  
8 the control means for processing, so leaving out that portion of the claim referencing the  
9 control means makes no sense.” Dkt. #63 at 23. Lufthansa argues that the specification  
10 provides the structure for both of these claim terms:  
11  
12

13 During operation of the socket 22, i.e., when the control and  
14 supervision unit 60 has applied the supply voltage to the socket 22  
15 via the supply lines 20, the short circuit detector 62 and the line  
16 supervision detector 64 have to perform extensive supervision  
17 tasks. On the one hand, a current limitation of the voltage supply to  
18 about 100 V is performed in the short circuit detector 62. Thereby  
19 an overload of the supply device 16 is prevented. Furthermore,  
20 when a strong overload is present, an overload signal is outputted  
21 by the short circuit detector to the control and supervision unit 60  
22 via the signal line 63. The second function of the short circuit  
23 detector 62 is fault current detection. If the difference of the  
24 current flowing in the two current supply lines 20' exceeds a  
25 predetermined value, a corresponding signal is outputted via the  
26 signal line 63 to the control and supervision unit 60, which then  
27 turns off the current supply. Both control functions of the short  
28 circuit detector 62 thus serve to determine electric interferences  
caused by the electric device 36 or potential manipulations.”

29 Dkt. #62 at 32 (citing JA7). AES again argues that there is no structure identified in the patent,  
30 instead there are blank boxes. Dkt. #63 at 23.

31 Consistent with the Court’s ruling on the first disputed term, the Court finds that  
32 disclosure of circuitry is not required for a person skilled in the art to understand this term. The  
33 Court further finds that AES is improperly attempting to read an extra, unsupported limitation

1 into the function of these terms. *See Omega Eng'g, supra*. For these reasons, the Court finds  
2 that the structures for these terms are not indefinite, that the term “fault current detector means”  
3 has the function of “detecting fault current,” “short circuit detector means” has the function of  
4 “detecting a short circuit or overload,” and the structures for these terms are, respectively,  
5 “circuit configured to determine the difference of the current flowing in the outlet supply lines  
6 and transmit a signal,” and “circuit configured to determine if the current flowing in the outlet  
7 supply lines is excessive and transmit a signal.”

9           5. “*Subsequent Detection*”

10           Claim 1 of the ‘016 patent provides as follows:

- 11                   1. ...**only if the time between the detection of a first contact pin and the**  
12                   **subsequent detection of a second contact pin of the plug does not exceed**  
13                   **a predetermined maximum time value.**

14           JA8 (emphasis added).

15           Lufthansa’s construction of this claim language is “the detection of the presence of first  
16 and second inserted contact pins such that the time interval of the detection ranges from zero to  
17 a predetermined maximum time value inclusive of these two end points.” Dkt. #47 at 5.  
18 Lufthansa’s proposed construction would cover any device that detects prongs inserted within  
19 “zero” seconds of each other (simultaneously) or “within a predetermined maximum time value  
20 inclusive of these two end points” (subsequently). *Id.*

21           AES argues that this claim language is indefinite. First, AES argues that the  
22 construction cannot include simultaneous detection because such an interpretation “conflicts  
23 with the plain meaning of two express phrases in the claim—‘only if’ and ‘subsequent  
24 detection.’” Dkt. #63 at 24-25. AES argues that Lufthansa is attempting to read these two  
25 phrases right out of the claim, and that this approach has been rejected by the Federal Circuit.  
26  
27  
28

1 *Id.* at 25 (citing *Vederi, LLC v. Google, Inc.*, 744 F.3d 1376, 1382–85 (Fed. Cir. 2014)  
2 (reversing district court because “construction requiring elevation, and ‘elevation’ alone in the  
3 strict sense, gives no effect to the ‘substantially’ modifier contained in the claims.”); *Aspex*  
4 *Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1348 (Fed. Cir. 2012) (reversing  
5 district court’s claim construction that the term “rearwardly directed free end” meant a  
6 “rearwardly directed end portion” because such a construction “effectively read [] the term  
7 ‘free’ out of the limitation”)). AES argues that the claim’s construction must incorporate the  
8 “later in time” meaning of “subsequent.” Dkt. #63 at 24.

10 AES also points to the prosecution history. The record clearly shows that Lufthansa  
11 amended Claim 1, removing the term “simultaneous” and adding the term “subsequent.” *See*  
12 JA105-110. The record also clearly shows that this language was changed, at least in part, to  
13 get around a prior patent, “the Crane Patent.” *See* JA108-09 (“the amendment... is ‘necessary’  
14 to define the invention over the patent to Crane et al...”).

16 Because the claim cannot be construed to cover simultaneous detection, AES argues  
17 that the claim is left with an ambiguous range of time, that the patent does not adequately  
18 define simultaneous or subsequent detection, and that one of ordinary skill in the art “can only  
19 guess what is covered and what is not, making the claim indefinite.” Dkt. #63 at 28-29.

21 In Response, Lufthansa argues that the patent history does not show a “clear and  
22 unmistakable disavowal” as required to find a disclaimer occurred. Dkt. #62 at 16. Lufthansa  
23 argues that it merely “amended its claims to clarify the claim scope when the examiner found  
24 one limitation to be a subset of another limitation...and then expressly stated that it was not  
25 surrendering any coverage...” Dkt. #81 at 14. Lufthansa points to language in the prosecution  
26 history where the examiner instructed the applicant to remove simultaneous detection to  
27  
28

1 overcome indefiniteness because simultaneous detection was a subset when a maximum  
2 contact time is not exceeded between the first and second plug detection. *Id.* (citing JA101-02).  
3 Lufthansa also argues that AES’ interpretation of the word “subsequent” to mean “later in  
4 time” is incorrect. *Id.* at 15. Lufthansa deems this interpretation to be “litigation-induced.” *Id.*  
5 Lufthansa offers its own definition: “the detection of another or second contact pin.” Finally,  
6 Lufthansa argues that “there is nothing unclear about this term” because Lufthansa has shown  
7 that the predetermined time value includes zero. *Id.* at 16.

9       The Court agrees with AES—both the explicit language of the claim and the  
10 prosecution history make clear that this claim does not include simultaneous detection. There  
11 is ample evidence from the prosecution history to conclude that Lufthansa made a “clear and  
12 unmistakable disavowal” of simultaneous detection in part to avoid the Crane patent. *See*  
13 *Purdue Pharma, supra*. Even if the Court ignored that evidence, focused instead on the  
14 “subset” discussion in the prosecution history, and believed that Lufthansa removed  
15 “simultaneous” solely to remove the overlapping subsets, Lufthansa fails to explain why it not  
16 only removed the word “simultaneous” in the amendment, but added the word “subsequent.”  
17 The Court agrees with AES’ interpretation of that word. Lufthansa’s interpretation of  
18 “subsequent” to have no temporal meaning in this claim ignores that the word “time” is found  
19 in the same sentence. JA8. Because the claim cannot be construed to cover simultaneous  
20 detection, AES is correct that the claim is left trying to cover an ambiguous range of time, and  
21 that one of ordinary skill in the art can only guess what is covered and what is not. Based on  
22 the language of the claim, the remainder of the patent, and the prosecution history, the Court  
23 finds by clear and convincing evidence that the claim language “subsequent detection” is  
24 indefinite.  
25  
26  
27  
28



**V. CONCLUSION**

This Court has construed the disputed claim terms in this case as set forth above, and the Clerk is directed to send a copy of this Order to all counsel of record.

DATED this 25 day of April 2016.



RICARDO S. MARTINEZ  
CHIEF UNITED STATES DISTRICT JUDGE

UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

LUFTHANSA TECHNIK AG,

Plaintiff,

v.

ASTRONICS ADVANCED ELECTRONIC  
SYSTEMS CORP. and KID-SYSTEME  
GMBH,

Defendants.

Case No. C14-1821RSM

ORDER DENYING MOTION FOR  
RECONSIDERATION

This matter comes before the Court on Plaintiff Lufthansa Technik AG (‘Lufthansa’)s ‘Motion for Clarification or Reconsideration of Claim Construction Ruling.’ Dkt. #128. Lufthansa moves the Court to reconsider or clarify its April 25, 2016, Claims Construction Order (‘the Order’). Dkt. #122. Following the Order, Defendant Astronics Advanced Electronic Systems (‘AES’) moved for Entry of Judgment (Dkt. #126); Lufthansa also moves for clarification regarding the appropriateness of this Motion.

In moving for reconsideration, Lufthansa argues that ‘the Order contains two erroneous conclusions..*First* the Order states that because ‘one of ordinary skill in the art can only guess what is covered and what is not.,’ the Court finds by clear and convincing evidence that the claim language ‘subsequent detection’ is indefinite.’ *Second*, the Order concludes that [Lufthansa] disclaimed ‘simultaneous detection’ during prosecution of the patent.” *Id.* at 2-3 (citing Dkt. #122

ORDER DENYING MOTION FOR RECONSIDERATION - 1

1 at 19) (emphasis in original). Regarding the first allegedly erroneous conclusion, Lufthansa  
2 argues that “AES submitted *no evidence* to support its position that ‘subsequent detection’ is  
3 indefinite.” *Id.* at 3. Lufthansa argues that AES’ expert refused to testify that the terms  
4 ‘simultaneously’ and ‘subsequent detection’ are indefinite. *Id.* at 4. Lufthansa cites to *Verve v.*  
5 *Crane Cams*, 311 F.3d 1116, 1119 (Fed. Cir. 2002) and other cases for the proposition that it is  
6 ‘legally erroneous. to find a term indefinite based solely on the intrinsic record without regard to  
7 what a skilled artisan would understand the term to mean.” *Id.* Lufthansa argues that “[t]he  
8 notion that a skilled artisan could not ascertain the scope of the ‘016 patent is contrary to the  
9 record,” and that the Court “should not enter judgment without more development of the record  
10 and an evidentiary hearing.” *Id.* at 5. Lufthansa cites to several cases for the proposition that  
11 ‘deciding the dispositive effect of indefiniteness is more appropriately tackled at summary  
12 judgment.” *Id.* at 6. Regarding the second allegedly erroneous conclusion, Lufthansa points out  
13 that the Order states that Lufthansa amended the claims “at least in part, to get around a prior  
14 patent, ‘the Crane Patent,” but that the Order also states that Lufthansa “fails to explain why it  
15 made these amendments.. These statements are irreconcilable, but more importantly,  
16 [Lufthansa] *did* explain why ‘subsequent’ was added to the claims.” *Id.* at 6-7. Lufthansa argues  
17 that “[t]he Order criticizes [Lufthansa]’s interpretation of ‘subsequent’ as having no temporal  
18 meaning. But that criticism is unfounded. ‘Subsequent’ is used throughout the patent to indicate a  
19 numerical, rather than temporal, element...[Lufthansa’s expert] made this point very clearly in  
20 his deposition.” *Id.* at 7. Finally, Lufthansa argues that “even if there were some disclaimer of  
21 claim scope, the most [Lufthansa] could have disclaimed was exactly a zero time difference..  
22 because Crane is a single-pin detection system with a zero time difference and without any  
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1 tolerance or error margin.” *Id.* (citing *3M Innovative Props. Co. v. Avery Dennison Corp.*, 350  
2 F.3d 1365, 1372-73 (Fed. Cir. 2003)).

3 In requesting clarification, Lufthansa argues that: the above conclusions by the Court  
4 require “clarification or reconsideration;” that AES’ pending Motion for Entry of Judgment is  
5 “premature;” that AES’ Motion “ignores that the day after the Order issued, this Court granted  
6 [Lufthansa’s] motion for jurisdictional discovery from KID and included AES in that ruling;” and  
7 that “the Court did not intend the Order to be a dispositive ruling on [Lufthansa’s] patent claims.”  
8 Dkt. #128 at 2.

9  
10 “Motions for reconsideration are disfavored.” LCR 7(h)(1). “The court will ordinarily  
11 deny such motions in the absence of a showing of manifest error in the prior ruling or a  
12 showing of new facts or legal authority which could not have been brought to its attention  
13 earlier with reasonable diligence.” *Id.*

14  
15 Regarding the first allegedly erroneous conclusion—that the claim language “subsequent  
16 detection” is indefinite—the Court begins with the understanding that it is empowered to review  
17 intrinsic and extrinsic evidence and reach legal conclusions, even if those conclusions were not  
18 reached by either party’s expert witness. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct.  
19 831, 837, 190 L. Ed. 2d 719 (2015); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed.  
20 Cir. 1995) (en banc), *aff’d*, 517 U.S. 370, 116 S. Ct. 1384, 134 L. Ed. 2d 577 (1996); *see also*  
21 *Phillips v. AWH Corp.*, 415 F.3d 1303, 1324 (Fed. Cir. 2005) (en banc) (extrinsic evidence may  
22 not be used “to contradict claim meaning that is unambiguous in light of the intrinsic evidence”).  
23 The Court’s conclusion as to this claim’s indefiniteness is based primarily on “the language of the  
24 claim, the remainder of the patent, and the prosecution history,” but is also based on AES’  
25 argument that “the claim is left trying to cover an ambiguous range of time, and that one of  
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1 ordinary skill in the art can only guess what is covered and what is not,” which in turn was  
2 quoted from AES’ briefing and based on citations to the testimony of both expert witnesses.  
3 Dkt. #122 at 19; Dkt. #63 at 28-29. Lufthansa appears to believe that, because AES’ expert  
4 “testified that he was *not* providing an opinion that the terms ‘simultaneously’ and ‘subsequent  
5 detection’ are indefinite,” AES “failed to provide any evidence of a skilled artisan’s understanding.”  
6 Dkt. #128 at 4 (emphasis in original). This is incorrect. *See, e.g.*, Dkt. #63 at 28-29 (citing  
7 depositions of both expert witnesses on the topic of a skilled artisan’s understanding). The  
8 Court is free to interpret the opinions of the expert witnesses and reach its own legal  
9 conclusions. Given this, Lufthansa has failed to show how the Court’s conclusion, or the Order  
10 generally, are manifestly erroneous under *Verve* and related cases.  
11

12  
13 Lufthansa has also failed to show why an evidentiary hearing is necessary to resolve  
14 this issue. The Court has already reviewed the submitted expert reports; Lufthansa makes no  
15 mention of new facts; the Court finds it far more likely that the requested evidentiary hearing  
16 would simply allow Lufthansa to reiterate stale legal arguments regarding the construction of  
17 the contested claims. Further, Lufthansa has known of AES’ indefiniteness arguments since at  
18 least the Joint Claim Construction and Prehearing Statement (Dkt. #63), and has had repeated  
19 opportunities to argue that the Court should reserve ruling on this issue for summary judgment  
20 but has failed to do so until this Motion for Reconsideration. Lufthansa fails to argue that the  
21 Court engaged in manifest error by ruling on indefiniteness at the claims construction stage.  
22 The Court believes it was fully briefed on the indefiniteness issue and, for the same reasons as  
23 previously stated, will not hear further argument.  
24

25  
26 Regarding the second allegedly erroneous conclusion, that Lufthansa disclaimed  
27 “simultaneous detection” during prosecution of the patent, the Court finds that its Order did note  
28

1 state irreconcilable findings. The Court found that Lufthansa removed the term simultaneous  
2 and added the term subsequent at least in part to get around the Crane Patent *and* that Lufthansa  
3 failed to explain why it made these amendments. Dkt. #122 at 18-19. Lufthansa argues that it  
4 did attempt to explain why it made these amendments in briefing and at the Markman Hearing.  
5 Perhaps the Court's Order would have been clearer if it had stated that Lufthansa failed to  
6 'adequately' or 'convincingly' explain why it made these amendments. Nevertheless, the Court  
7 finds that Lufthansa is essentially arguing that it disagrees with the Court's Order, but these  
8 arguments fail to show that the Court engaged in manifest error. Lufthansa fails to convince  
9 the Court that 'subsequent' does not have a temporal meaning when used in the same sentence as  
10 the word 'time,' and the Court refuses to follow the testimony of Lufthansa's expert over the  
11 word's 'ordinary and customary meaning.' *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13  
12 (Fed. Cir. 2005) (en banc); *see also ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed.  
13 Cir. 2003) (in construing a claim term's ordinary meaning, the context in which a term is used  
14 must be considered). Lufthansa's argument that 'even if there were some disclaimer of claim  
15 scope, the most [Lufthansa] could have disclaimed was exactly a zero time difference,' stands in  
16 the face of the ambiguous language of the claim (*e.g.*, the word subsequent) and does not  
17 change the Court's conclusion that 'the claim is left trying to cover an ambiguous range of time,  
18 and that one of ordinary skill in the art can only guess what is covered and what is not.' *See*  
19 Dkt. #122 at 19.

20  
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23  
24 The Court next turns to Lufthansa's request or requests for clarification. The Court finds  
25 that, to the extent Lufthansa moves for clarification regarding the Court's conclusions, the Court  
26 has clarified them above. To the extent Lufthansa argues that AES' pending Motion for Entry  
27 of Judgment is procedurally invalid, such arguments are properly raised in Response to that  
28

1 Motion and the Court will reserve its ruling. The Court wishes to clarify that its Claims  
2 Construction Order was limited to claims construction, and did not itself reach a ruling on  
3 Lufthansa's patent claims.

4 Lufthansa does not demonstrate manifest legal error or present new facts or legal  
5 authority which could not have been brought to the Court's attention earlier with reasonable  
6 diligence. Accordingly, Lufthansa's Motion for Reconsideration (Dkt. #128) is DENIED.  
7

8  
9 DATED this 13th day of May 2016.

10  
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12 RICARDO S. MARTINEZ  
13 CHIEF UNITED STATES DISTRICT JUDGE  
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Activity in Case 2:14-cv-01821-RSM Lufthansa Technik AG v. Astronics  
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U.S. District Court

United States District Court for the Western District of Washington

### Notice of Electronic Filing

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**Case Name:** Lufthansa Technik AG v. Astronics Advanced Electronic Systems Corp.

**Case Number:** [2:14-cv-01821-RSM](#)

**Filer:**

**Document Number:** 139(No document attached)

### Docket Text:

**MINUTE ENTRY** for proceedings held before Judge Ricardo S.Martinez- Dep Clerk: *Lowell Williams* ; Pla Counsel: *Lawrence Rosenberg, David Maiorana, Susan Gerber* ; Def Counsel: *James Bicks, Joseph Casino, Stuart Dunwoody, Walter Hanley, Mark Chapman, Michael Scott* ; Time of Hearing: *1:30 PM* ; Telephone Conference held on 6/1/2016. Court hears from counsel regarding how to proceed on the pending motions. Court STRIKES as improper MOTION for Judgment [126] filed by Astronics Advanced Electronic Systems Corp (AES). Court stays all pending motions and discovery. KID's Motion to Stay [130] is STRICKEN as moot. Trial date and all pretrial deadlines terminated. AES' Motion for Summary Judgment due by 6/15/2016; Lufthansa's response due by 7/5/2016; AES' Reply due by 7/15/2016.(LW)

**2:14-cv-01821-RSM Notice has been electronically mailed to:**

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**2:14-cv-01821-RSM Notice will not be electronically mailed to:**

UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

LUFTHANSA TECHNIK AG,

Plaintiff,

v.

ASTRONICS ADVANCED ELECTRONIC  
SYSTEMS CORP. and KID-SYSTEME  
GMBH,

Defendants.

Case No. C14-1821RSM

ORDER GRANTING ASTRONICS  
ADVANCED ELECTRONIC SYSTEMS  
CORP.'S MOTION FOR SUMMARY  
JUDGMENT

**I. INTRODUCTION**

This matter comes before the Court on Defendant Astronics Advanced Electronic Systems Corporation ("AES")'s Motion for Summary Judgment. Dkt. #140. AES argues that summary judgment is warranted because the patent at issue is invalid for indefiniteness. *Id.* Plaintiff Lufthansa Technik AG ("Lufthansa") opposes the Motion and requests oral argument. Dkt. #142. Defendant KID-Systeme GmbH ("KID") has not filed a brief in support or opposition to this Motion. For the reasons stated below, the Court determines that oral argument is not necessary, agrees with Defendant AES, and GRANTS its Motion for Summary Judgment.

**II. BACKGROUND**

ORDER GRANTING ASTRONICS ADVANCED ELECTRONIC SYSTEMS CORP.'S  
MOTION FOR SUMMARY JUDGMENT - 1

**A. Factual Background**

The background facts of this case have already been set forth in the Court's Order on Claims Construction (Dkt. #122) and the Court incorporates them by reference.

In this action, Plaintiff Lufthansa alleges infringement of United States Patent No. 6,016,016 ("the '016 patent") by Defendant AES. The patent claims at issue are directed to an aircraft power outlet system that "applies... voltage to the socket when the plug detector signal the presence of a plug.... i.e., no... voltage is provided... as long as no plug of an electric device is inserted." Dkt. #64-1 at 7.

**B. Procedural Background**

Lufthansa filed its Complaint in this Court on November 26, 2014 (Dkt. #1) and moved for leave to amend its Complaint and join KID as a Defendant on September 8, 2015 (Dkt. #32). Initial briefing on claim construction was filed by Lufthansa and AES on November 25, 2015 (Dkt. ##62, 63), with responsive briefing on December 16, 2016 (Dkt. ##81, 82). KID made an appearance on January 8, 2016, solely to contest jurisdiction and move to dismiss claims brought against it. *See* Dkt. ## 83, 97. The *Markman* hearing occurred on February 5, 2016.

After reviewing the parties' briefing, which cited declarations and deposition testimony from two experts, the Court issued its Claims Construction Order on April 25, 2016. Dkt. #122. In that Order, the Court construed Claim 1 of the patent and "agree[d] with AES [that] both the explicit language of the claim and the prosecution history make clear that this claim does not include simultaneous detection." Dkt. #122 at 19. The Court found "ample evidence from the prosecution history to conclude that Lufthansa made a 'clear and unmistakable disavowal' of simultaneous detection in part to avoid the Crane patent." *Id.* The Court held

1 that “Lufthansa’s interpretation of ‘subsequent’ to have no temporal meaning in this claim  
2 ignores that the word ‘time’ is found in the same sentence.” *Id.* The Court continued,  
3 “[b]ecause the claim cannot be construed to cover simultaneous detection, AES is correct that  
4 the claim is left trying to cover an ambiguous range of time, and that one of ordinary skill in the  
5 art can only guess what is covered and what is not.” *Id.* The Court concluded that, “[b]ased on  
6 the language of the claim, the remainder of the patent, and the prosecution history, the Court  
7 finds by clear and convincing evidence that the claim language ‘subsequent detection’ is  
8 indefinite.” *Id.*

10 Lufthansa moved for reconsideration, which this Court denied. Dkt. #131. Lufthansa  
11 argued that there was insufficient evidence to find that the term “subsequent detection” was  
12 indefinite, and that the Court “should not enter judgment without more development of the  
13 record and an evidentiary hearing.” *Id.* at 2. The Court rejected this argument, noting that it  
14 had already found clear and convincing evidence that the claim was indefinite. The Court  
15 stated that it based its decision on both intrinsic and extrinsic evidence, including: “the  
16 language of the claim, the remainder of the patent, and the prosecution history,” but [also on]  
17 AES’ argument that “the claim is left trying to cover an ambiguous range of time, and that one  
18 of ordinary skill in the art can only guess what is covered and what is not,” which in turn was  
19 quoted from AES’ briefing and based on citations to the testimony of both expert witnesses. *Id.*  
20 at 3-4 (quoting Claims Construction Order and citing AES’s claim construction briefing). The  
21 Court found no reason to reconsider its decision, explaining that it had been “fully briefed on  
22 the indefiniteness issue and, for the same reasons as previously stated, will not hear further  
23 argument.” *Id.*

1 The Court held a telephonic status conference on June 1, 2016, where Lufthansa once  
2 again pressed for more discovery regarding the meaning of the term “subsequent detection.” In  
3 response, the Court directed AES to file a motion for summary judgment, indicated that it  
4 would not revisit its indefiniteness decision, stayed all discovery, and terminated the trial date  
5 and all pre-trial deadlines pending this motion. *See* Dkt. # 139.

### 7 III. DISCUSSION

#### 8 A. Legal Standard

9 Summary judgment is appropriate where “the movant shows that there is no genuine  
10 dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed.  
11 R. Civ. P. 56(a); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247 (1986); *see also Nike, Inc.*  
12 *v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994) (setting forth same standard  
13 in a patent case). Material facts are those which might affect the outcome of the suit under  
14 governing law. *Anderson*, 477 U.S. at 248. In ruling on summary judgment, a court does not  
15 weigh evidence to determine the truth of the matter, but “only determine[s] whether there is a  
16 genuine issue for trial.” *Crane v. Conoco, Inc.*, 41 F.3d 547, 549 (9th Cir. 1994) (citing  
17 *Federal Deposit Ins. Corp. v. O’Melveny & Meyers*, 969 F.2d 744, 747 (9th Cir. 1992)).

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20 The Court must draw all reasonable inferences in favor of the non-moving party. *See*  
21 *O’Melveny & Meyers*, 969 F.2d at 747, *rev’d on other grounds*, 512 U.S. 79 (1994). However,  
22 the nonmoving party must make a “sufficient showing on an essential element of her case with  
23 respect to which she has the burden of proof” to survive summary judgment. *Celotex Corp. v.*  
24 *Catrett*, 477 U.S. 317, 323 (1986). Further, “[t]he mere existence of a scintilla of evidence in  
25 support of the plaintiff’s position will be insufficient; there must be evidence on which the jury  
26 could reasonably find for the plaintiff.” *Anderson*, 477 U.S. at 251.  
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**B. Analysis**

Summary judgment of invalidity is appropriate if the patent claim fails to “particularly point[] out and distinctly claim[] the subject matter which the inventor or a joint inventor regards as the invention.” 35 U.S.C. § 112(b). A claim fails to satisfy this requirement and is invalid if its language, when read in light of the specification and the prosecution history, “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

Where summary judgment involves issues of patent validity, the party seeking to invalidate the patent must overcome a presumption that the patent is valid. *See* 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238, 2243 (2011); *U.S. Gypsum Co. v. Nat’l Gypsum Co.*, 74 F.3d 1209, 1212 (Fed. Cir. 1996). This presumption places the burden on the challenging party to prove the patent is invalid by clear and convincing evidence. *Microsoft*, 131 S. Ct. at 2243; *U.S. Gypsum Co.*, 74 F.3d at 1212. However, “this presumption of validity does not alter the degree of clarity that § 112[] . . . demands from patent applicants; to the contrary, it incorporates that definiteness requirement by reference.” *Nautilus*, 134 S. Ct. at 2130 n.10 (addressing predecessor of §112(b)).

AES argues that “[t]he inescapable result of the Court’s indefiniteness determination is that the asserted claims of the ‘016 Patent are invalid.” Dkt. #140 at 6. AES argues that “it is black letter law that a claim that includes an indefinite limitation is invalid pursuant to 35 U.S.C. §§ 112 and 282,” and quotes the Court’s prior Order stating “[i]f a single claim limitation is indefinite, the entire claim is invalid.” *Id.* (citing Dkt. #122 at 8). AES argues that, based on the Court’s Prior Claim Construction Order, Claim 1 is invalid because it contains the indefinite limitation “subsequent detection.” *Id.* (citing *Gardner v. Toyota Motor Corp.*, 2009

1 WL 4110305, at \*6 (W.D. Wash. Nov. 19, 2009) (finding claim limitation indefinite and claim  
2 “therefore invalid”). AES argues that “[b]ecause all of the other claims in the ‘016 Patent  
3 incorporate Claim 1, the entire patent is indefinite.” *Id.* at 7 (citing *Interval Licensing LLC v.*  
4 *AOL Inc.*, 766 F.3d 1364, 1374 (Fed. Cir. 2014) (“In sum, the ‘unobtrusive manner that does  
5 not distract a user’ phrase, when viewed in light of the specification and prosecution history,  
6 fails to ‘inform those skilled in the art about the scope of the invention with reasonable  
7 certainty.’ The claims that depend on that phrase are thus invalid for indefiniteness.” (internal  
8 citations omitted)); *Fargo Elecs., Inc. v. Iris, Ltd., Inc.*, 287 F. App’x 96, 99 (Fed. Cir. 2008)  
9 (affirming district court holding that “independent claim 8 is invalid as indefinite” and  
10 “[b]ecause dependent claims 9 through 15 depend from claim 8 . . . they are also invalid as  
11 indefinite.”); Manual of Patent Examining Procedure § 608.01(n) (7th ed. 1998)). AES argues  
12 that “[a]n indefinite patent is an invalid patent as a matter of law.” *Id.* (citing 35 U.S.C. §  
13 282(b)(3)(A); *Interval Licensing*, 766 F.3d at 1369-70, 1377). To further support its position,  
14 AES points to several cases where other district courts have granted summary judgment finding  
15 invalidity after determining a patent to be indefinite. *Id.* at 7-9 (citing cases). AES argues that  
16 *MyMedicalRecords Inc. v. Walgreen Co.*, 2014 WL 7338822, at \*1 (C.D. Cal. Dec. 22, 2014),  
17 “is squarely on point.” Dkt. #140 at 8. In *MyMedicalRecords*, the court had found a patent-in-  
18 suit was indefinite during claim construction and the defendants filed a motion for summary  
19 judgment as to invalidity. *Id.* The plaintiff objected, arguing that that there were disputed  
20 issues of material fact regarding whether a person of ordinary skill could understand the  
21 indefinite claims. *Id.* at \*2. The court granted defendants’ motion for summary judgment,  
22 recognizing that “a claim that includes an indefinite limitation is invalid pursuant to 35 U.S.C.  
23 § 112.” *Id.* at \*1. It noted that the plaintiff was attempting “to re-litigate the issue of  
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ORDER GRANTING ASTRONICS ADVANCED ELECTRONIC SYSTEMS CORP.’S  
MOTION FOR SUMMARY JUDGMENT - 6

1 indefiniteness” and that “[t]he parties had the opportunity to fully brief and argue indefiniteness  
2 during Claim Construction.” *Id.* at \*2. The Court concluded that:

3 [i]ndefiniteness is a question of law resolvable during claim  
4 construction. . . . while it is true that claims are to be construed and  
5 indefiniteness is to be determined from the perspective of a  
6 hypothetical person of ordinary skill in the art (POSITA), this  
7 Court’s Claim Construction Order itself makes clear that the  
8 Court’s indefiniteness ruling was made from the perspective of a  
9 POSITA. There are no factual disputes to be resolved . . . .”

10 *Id.* The court accordingly entered summary judgment of invalidity. *Id.* AES argues that there  
11 are no issues of material fact remaining because “the Court has already made [understanding of  
12 one skilled in the art] factual determinations, concluding that clear and convincing evidence  
13 shows that one skilled in the art would not understand the scope of the “subsequent detection”  
14 as used in the ‘016 Patent.” *Id.* at 11 (citing Dkt. #122 at 19). AES argues that an invalid  
15 patent cannot be infringed. *Id.* (citing *Commil USA, LLC v. Cisco Sys., Inc.*, 135 S. Ct. 1920,  
16 1929 (2015); *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1580 (Fed. Cir. 1983) (“The  
17 claim being invalid there is nothing to be infringed.”)).

18 In Response, Lufthansa begins by extensively re-briefing issues already addressed in  
19 claims construction. *See* Dkt. #142 at 2-13. Lufthansa cites to a Third Declaration of expert  
20 witness Dr. Collins, signed on July 5, 2016, and submitted for the first time with its brief. *Id.* at  
21 11. Lufthansa argues that “AES seeks summary judgment of invalidity based solely on this  
22 Court’s determination during claim construction that the claim term ‘subsequent detection’ is  
23 indefinite.” *Id.* at 16. Lufthansa argues that “AES did not come forward with evidence [during  
24 the claim construction phase] to carry its burden of proving indefiniteness under the *Nautilus*  
25 standard,” and that “AES has not submitted any additional evidence to support its motion for  
26 summary judgment.” *Id.* Lufthansa “[a]ccept[s] this Court’s determination that some claim  
27 scope was disclaimed during prosecution.” *Id.* at 16-17 (noting in a footnote that it is rearguing  
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ORDER GRANTING ASTRONICS ADVANCED ELECTRONIC SYSTEMS CORP.’S  
MOTION FOR SUMMARY JUDGMENT - 7



1 this issue anyway “[f]or completeness and to preserve the issue.”). Nevertheless, Lufthansa  
2 argues that the instant Motion must be denied because AES “submitted no evidence to carry its  
3 burden, while [Lufthansa] submitted un rebutted evidence that a skilled artisan would be able to  
4 discern the scope of the claims with reasonable certainty.” *Id.* Lufthansa highlights, as it did in  
5 previous briefing before this Court, that AES’s proffered expert did **not** opine that the claims  
6 are “indefinite.” *Id.* at 19 (emphasis in original). Lufthansa argues that AES is wrong to argue  
7 that the Court’s claim construction ruling must inexorably lead to a finding of invalidity, and  
8 that the “*Nautilus* standard requires that the Court determine what the claims mean to a person  
9 of ordinary skill in the art.” *Id.* at 20. Lufthansa argues that “[w]hile a court might find the  
10 intrinsic record unclear, a patent should not be declared invalid if a person of ordinary skill in  
11 the art could discern the scope of the claims with reasonable certainty.” *Id.* citing *Gilead Scis.,*  
12 *Inc. v. Mylan Inc.*, No. 1:14CV99, 2015 WL 1534067, at \*2 (N.D. W.Va. Apr. 6, 2015)  
13 (“Although a court may find a claim term invalid for indefiniteness after construing the term, it  
14 is clear that what a ‘term means to a person of ordinary skill in the art is a separate question  
15 from whether it is sufficiently definite to put others in the field on notice regarding the bounds  
16 of the claims....’”) (citation omitted). Lufthansa argues that “AES cites a number of cases as  
17 alleged support for its position that this Court can grant summary judgment at this juncture,”  
18 but argues that “a significant portion of the cases that AES cites pre-date *Nautilus* and apply the  
19 wrong legal standard for indefiniteness, and that “many of the cases AES cites involve  
20 specialized instances of indefiniteness that are *per se* indefinite as a matter of law.” *Id.* at 22.  
21 Lufthansa argues that *MyMedicalRecords* is not “squarely on point” for precisely that reason—  
22 the claims were *per se* indefinite because the patent disclosed no algorithm for performing the  
23 recited function. *Id.* Lufthansa argues that “to the extent that the Court determines that there is  
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1 any conflict between [Lufthansa's] evidence that the claim terms are sufficiently definite and  
2 AES's assertion that the terms are ambiguous, those factual disputes prevent this Court from  
3 entering summary judgment." *Id.* at 24.

4 On Reply, AES argues that Lufthansa's Response is "devoted entirely to rehashing—for  
5 a third time—the same arguments it made during claim construction and in its motion for  
6 reconsideration." Dkt. #144 at 2. AES argues that, although it set forth "case after case where  
7 courts entered judgment of invalidity after finding a patent indefinite," Lufthansa's Response  
8 "does not cite a single case where a court held that an indefinite patent is valid," nor did it "cite  
9 a single case where a court determined that a patent is indefinite, but still postponed a  
10 determination of invalidity pending further fact finding." *Id.* at 3. AES next addresses  
11 *MyMedicalRecords*, arguing that it "shows how a court dealt with issues of patent invalidity  
12 once it found a patent indefinite, that "[i]t does not matter why the court found indefiniteness,"  
13 because "[w]hat matters is what the court did after it made that finding." *Id.* at 4. AES argues:

16 [Lufthansa] then argues that "it would be legal error for this Court  
17 to grant summary judgment of invalidity without giving due  
18 consideration to evidence of what a skilled artisan could discern  
19 about the scope of the claims." Dkt. # 142 at 21. In other words,  
20 [Lufthansa] accuses the Court of considering only intrinsic  
21 evidence when deciding indefiniteness. *Id.* [Lufthansa] has made  
22 and lost this argument before. *See* Dkt. ## 128 & 131. And it lost  
23 for good reason: The Court did consider the understanding of a  
24 skilled artisan when it decided indefiniteness, basing that decision  
25 on the testimony of two experts. *See* Dkt. # 131 at 4; *infra* Part II  
26 (discussing evidence considered). [Lufthansa] has no basis to  
27 assert otherwise; it simply disagrees with the Court.

28 *Id.* at 6. AES argues that Lufthansa "misleadingly cites *Gilead*," but "the *Gilead* court merely  
recognized that it needed to hear evidence regarding the understanding of one skilled in the art  
before it could decide indefiniteness, by contrast the Court here "heard such evidence and  
decided that one skilled in the art would not understand the scope of the claims." *Id.* at 6 n.6

1 (citing *Gilead*, 2015 WL 1534067, at \*2). AES argues that Luthansa's efforts to reargue  
2 indefiniteness and the prosecution history disclaimer should be rejected. *Id.* at 7-12. AES  
3 points out that Lufthansa's submission of the Third Declaration of its expert Dr. Collins is  
4 untimely and argues that it should not be considered. *Id.* at 13 (citing Dkt. #31 (setting  
5 *Markman* deadlines); *Largan Precision Co., Ltd. v. Genius Electrical Optical Co.*, 2014 WL  
6 6882275 at \*2 n.1 (N.D. Cal. Dec. 5, 2014) (holding "The parties may not use summary  
7 judgment or other motions as stealth weapons for reconsideration, whether based on 'new'  
8 expert opinions or anything else not provided for in the Local Rules.")).  
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10 To begin with, the Court agrees with AES that Lufthansa's submission of the Third  
11 Declaration of its expert Dr. Collins is untimely, and finds inappropriate Lufthansa's attempts  
12 to create issues of fact on topics so clearly addressed and resolved at the claims construction  
13 phase. The Court disagrees with Lufthansa's assertion that the question before the Court now  
14 is whether "the claim terms are sufficiently definite," given that the Court has already twice  
15 ruled that the claim terms at issue are indefinite. *See* Dkt. #122. This settled legal conclusion  
16 cannot form the basis for a genuine issue of material fact precluding summary judgment. What  
17 remains is a simple question of law—given the Court's indefiniteness ruling, is summary  
18 judgment dismissal of Plaintiff's claims against AES warranted?  
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21 Given the Court's prior rulings, the Court now explicitly concludes that Claim 1 and  
22 therefore the entire patent "fail[s] to inform, with reasonable certainty, those skilled in the art  
23 about the scope of the invention." *See Nautilus*, 134 S. Ct. at 2124. Having previously found  
24 that Claim 1 is indefinite, the Court agrees with AES and cited cases—the remainder of the  
25 patent is invalid because all of the patents' claims are dependent on Claim 1. *See Gardner*,  
26 2009 WL 4110305, at \*6 (finding claim limitation indefinite and claim "therefore invalid");  
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1 *Interval Licensing LLC*, 766 F.3d at 1374 (“In sum, the ‘unobtrusive manner that does not  
2 distract a user’ phrase, when viewed in light of the specification and prosecution history, fails  
3 to ‘inform those skilled in the art about the scope of the invention with reasonable certainty.’  
4 The claims that depend on that phrase are thus invalid for indefiniteness.” (internal citations  
5 omitted)); *Fargo Elecs., Inc. v. Iris, Ltd., Inc.*, 287 F. App’x 96, 99 (Fed. Cir. 2008) (affirming  
6 district court holding that “independent claim 8 is invalid as indefinite” and “[b]ecause  
7 dependent claims 9 through 15 depend from claim 8 . . . they are also invalid as indefinite.”).  
8 Lufthansa cites to no case supporting its apparent position that the Court cannot find an  
9 indefinite patent invalid. AES has met its burden of proving that the patent is invalid by clear  
10 and convincing evidence.  
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12  
13 Lufthansa’s attempt to relitigate the issue of indefiniteness via the Court’s alleged  
14 failure to consider the perspective of a person of ordinary skill in the art is squarely addressed  
15 by *MyMedicalRecords*. Although Lufthansa is correct that the court in *MyMedicalRecords* had  
16 a different basis for determining invalidity, once determined, the remainder of the case is on  
17 point. The court in *MyMedicalRecords* held that the plaintiff was attempting “to re-litigate the  
18 issue of indefiniteness” and that “[t]he parties had the opportunity to fully brief and argue  
19 indefiniteness during Claim Construction.” The same can be said here. The court in  
20 *MyMedicalRecords* concluded that:  
21

22 [i]ndefiniteness is a question of law resolvable during claim  
23 construction. . . . while it is true that claims are to be construed and  
24 indefiniteness is to be determined from the perspective of a  
25 hypothetical person of ordinary skill in the art (POSITA), this  
26 Court’s Claim Construction Order itself makes clear that the  
Court’s indefiniteness ruling was made from the perspective of a  
POSITA. There are no factual disputes to be resolved . . . .”

27 2014 WL 7338822, at \*2. Any question that the Court neglected to consider the perspective of  
28 a person of ordinary skill in the art were addressed and dispelled by the Court’s Order on  
ORDER GRANTING ASTRONICS ADVANCED ELECTRONIC SYSTEMS CORP.’S  
MOTION FOR SUMMARY JUDGMENT - 11

1 Plaintiff's Motion for Reconsideration. Dkt. #131 at 3-4 (noting that the Court interpreted the  
2 opinions of both parties' expert witnesses and reached its own legal conclusions).

3 Because the Court finds the '016 Patent to be invalid, AES is correct that it cannot be  
4 infringed. *See Commil USA*, 135 S. Ct. at 1929; *Richdel*. 714 F.2d at 1580. Summary  
5 judgment dismissal of Plaintiff's infringement claims against AES is thus warranted. As a final  
6 note, the departure of AES as a Defendant in this case moots AES' need to obtain discovery,  
7 and thus the Court will strike AES' Motion to Compel, Dkt. #39.

9  
10 **IV. CONCLUSION**

11 Having reviewed the relevant pleadings, the declarations and exhibits attached thereto,  
12 and the remainder of the record, the Court hereby finds and ORDERS that:

- 13 1. Defendant Astronics Advanced Electronic Systems Corporation ("AES")'s Motion  
14 for Summary Judgment (Dkt. #140) is GRANTED.
- 15 2. U.S. Patent No. 6,016,016 is declared invalid for indefiniteness.
- 16 3. All claims of Plaintiff Lufthansa Technik AG against Defendant AES in this matter  
17 are dismissed with prejudice.
- 18 4. Defendant AES' pending Motion to Compel, Dkt. #39, is STRICKEN as MOOT.
- 19 5. The remaining parties, Lufthansa and KID-Systeme GmbH, are DIRECTED to file  
20 with this Court no later than **seven (7) days** from the date of this Order a single  
21 Joint Status Report addressing the status of the case and the need for the Court to  
22 rule on the remaining Motions given this Order.

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28 ORDER GRANTING ASTRONICS ADVANCED ELECTRONIC SYSTEMS CORP.'S  
MOTION FOR SUMMARY JUDGMENT - 12

1  
2 DATED this 20<sup>th</sup> day of July 2016.

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5 RICARDO S. MARTINEZ  
6 CHIEF UNITED STATES DISTRICT JUDGE  
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UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF WASHINGTON

Lufthansa Technik AG, )  
 ) No. C14-1821 RSM  
Plaintiff, )  
 ) STIPULATION, MOTION, AND ORDER  
v. ) REGARDING STAY AND REQUEST FOR  
 ) FINAL JUDGMENT  
Astronics Advanced Electronic Systems Corp. )  
and KID-Systeme GmbH, )  
 )  
Defendants. )

**STIPULATION AND MOTION**

The parties, by their undersigned counsel, stipulate as follows:

1. On July 20, 2016, the Court issued its Summary Judgment Order (Dkt. No. 148), granting Defendant Astronics Advanced Electronic System Corp.'s ("AES") motion for summary judgment; declaring Plaintiff Lufthansa Technik AG's ("LHT") U.S. Patent No. 6,016,016 invalid for indefiniteness; dismissing with prejudice LHT's claims against AES; striking AES's motion to compel as moot; and directing LHT and Defendant KID-Systeme GmbH's ("KID") to submit a Joint Status Report in seven days addressing the status of the case and the need for the Court to rule on the remaining Motions given the Summary Judgment Order.
2. On July 27, 2016, LHT and KID submitted their Joint Status Report (Dkt. No. 149).

STIPULATION, MOTION, AND ORDER

- 1 -

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1           3.     In the Joint Status Report, LHT stated that it intends to appeal the Summary  
2 Judgment Order, which dismissed all of LHT's claims against AES with prejudice.

3           4.     Because this action presents more than one claim for relief and because multiple  
4 parties are involved, LHT requests that the Court direct entry of a final judgment under Federal  
5 Rule of Civil Procedure 54(b) as to LHT's claims against AES with the express determination  
6 "that there is no just reason for delay."

7           5.     KID does not oppose LHT's request for this entry of judgment under Rule 54(b).

8           6.     LHT contacted counsel for AES, and AES takes no position on this motion.

9           7.     LHT's claims against KID remain pending.

10          8.     On January 29, 2016, KID moved to dismiss LHT's claims. (Dkt. No. 97.)

11          9.     On April 26, 2016, this Court ordered KID to produce jurisdictional discovery to  
12 LHT. (Dkt. No. 124.) On June 1, 2016, the Court stayed all pending motions and discovery.  
13 (Dkt. No. 139.) In view of the stay, KID has not yet produced that jurisdictional discovery to  
14 LHT.

15          10.    On May 12, 2016, KID brought a supplemental motion to dismiss. (Dkt. No.  
16 129.)

17          11.    LHT and KID jointly request that the Court stay proceedings on LHT's claims  
18 against KID, including the pending motions to dismiss (Dkt. Nos. 97 and 129), and continue the  
19 stay of discovery in compliance with the Court's jurisdictional discovery order (Dkt. No. 124),  
20 pending the outcome of LHT's forthcoming appeal. LHT and KID will submit an updated joint  
21 status report to the Court within 14 days of the date the Federal Circuit issues its mandate in  
22 LHT's appeal.

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STIPULATION, MOTION, AND ORDER

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DATED this 17th day of August, 2016.

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STIPULATION, MOTION, AND ORDER

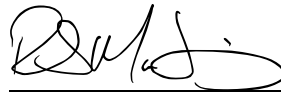
**ORDER**

It is so ORDERED this 18<sup>th</sup> day of August 2016 that:

(a) Finding that there is no just reason for delay, the Court enters final judgment as to LHT's claims against AES;

(b) All proceedings on LHT's claims against KID, including KID's pending motions to dismiss (Dkt. #97 and #129) and the discovery in compliance with the Court's jurisdictional discovery order (Dkt. #124), are hereby stayed pending the outcome of LHT's forthcoming appeal of the judgment as to LHT's claims against AES; and

(c) LHT and KID will submit an updated joint status report to the Court within 14 days of the date the Federal Circuit issues its mandate in LHT's appeal.



RICARDO S. MARTINEZ  
CHIEF UNITED STATES DISTRICT JUDGE

Presented by:

Jones Day  
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STIPULATION, MOTION, AND ORDER

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STIPULATION, MOTION, AND ORDER

- 5 -

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United States District Court  
WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

LUFTHANA TECHNIK AG

Plaintiff,

v.

ASTRONICS ADVANCED ELECTRONIC SYSTEMS  
CORP., *et al*

Defendants.

**JUDGMENT IN A CIVIL CASE**

Case No. C14-1821 RSM

\_\_\_ **Jury Verdict.** This action came before the Court for a trial by jury. The issues have been tried and the jury has rendered its verdict.

**X** **Decision by Court.** This action came to consideration before the Court. The issues have been considered and a decision has been rendered.

THE COURT HAS ORDERED THAT: Defendant Astronics Advanced Electronic Systems Corporation (“AES”)’s Motion for Summary Judgment (Dkt. #140) is GRANTED. U.S. Patent No. 6,016,016 is declared invalid for indefiniteness. All claims of Plaintiff Lufthansa Technik AG against Defendant AES in this matter are dismissed with prejudice.

Dated this 18<sup>th</sup> day of August 2016.

WILLIAM M. MCCOOL  
Clerk

/s/ Rhonda Stiles  
Deputy Clerk



US006016016A

**United States Patent** [19]  
**Starke et al.**

[11] **Patent Number:** **6,016,016**  
[45] **Date of Patent:** **Jan. 18, 2000**

[54] **VOLTAGE SUPPLY APPARATUS**  
[75] Inventors: **Henry Starke**, Ellerbek; **Andrew Muirhead**, Hamburg, both of Germany  
[73] Assignee: **Luftansa Technik AG**, Hamburg, Germany

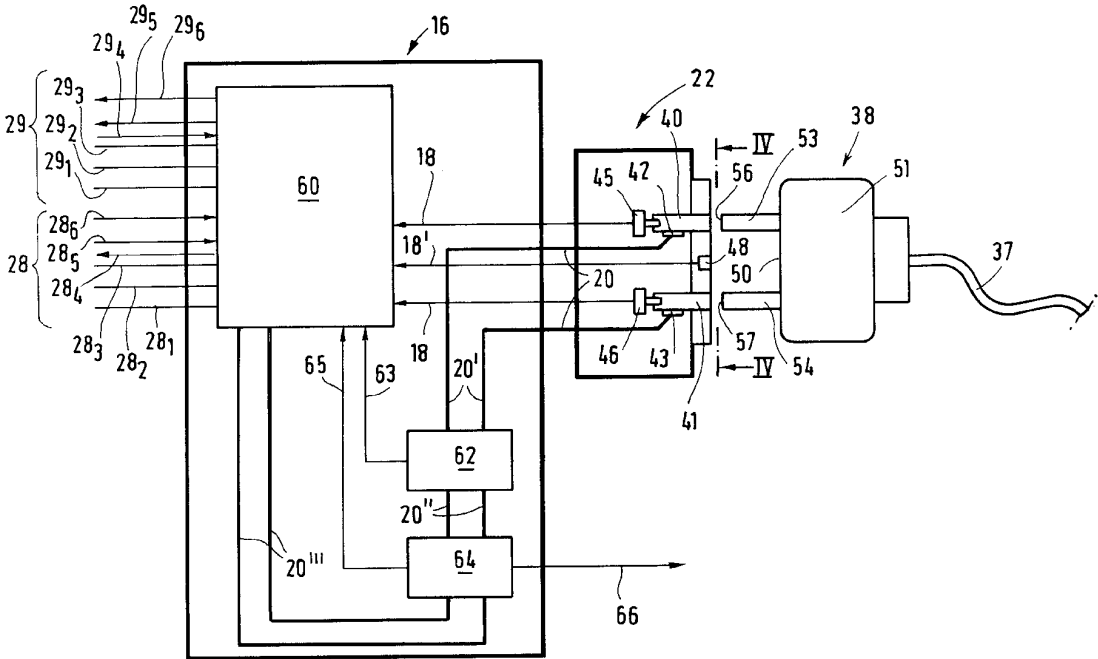
[21] Appl. No.: **09/085,113**  
[22] Filed: **May 28, 1998**  
[30] **Foreign Application Priority Data**  
May 31, 1997 [DE] Germany ..... 197 22 922  
[51] **Int. Cl.<sup>7</sup>** ..... **H02J 3/06**  
[52] **U.S. Cl.** ..... **307/9.1; 307/38; 395/283**  
[58] **Field of Search** ..... 307/9.1, 38, 90, 307/125, 119; 333/12, 181; 395/283

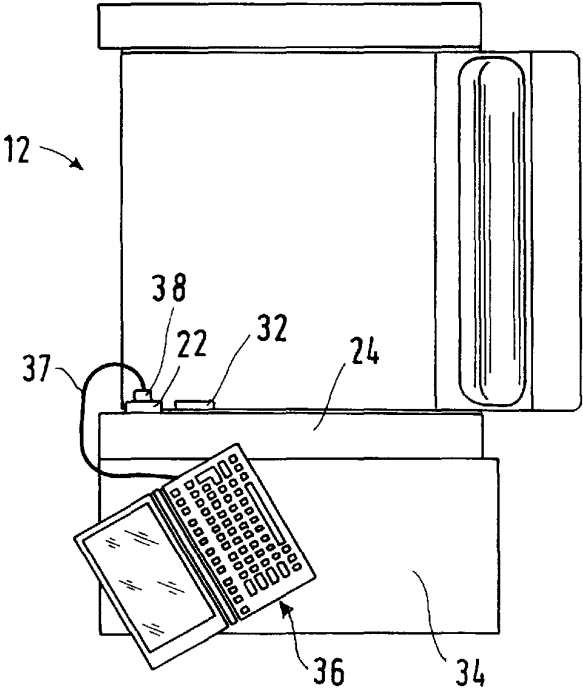
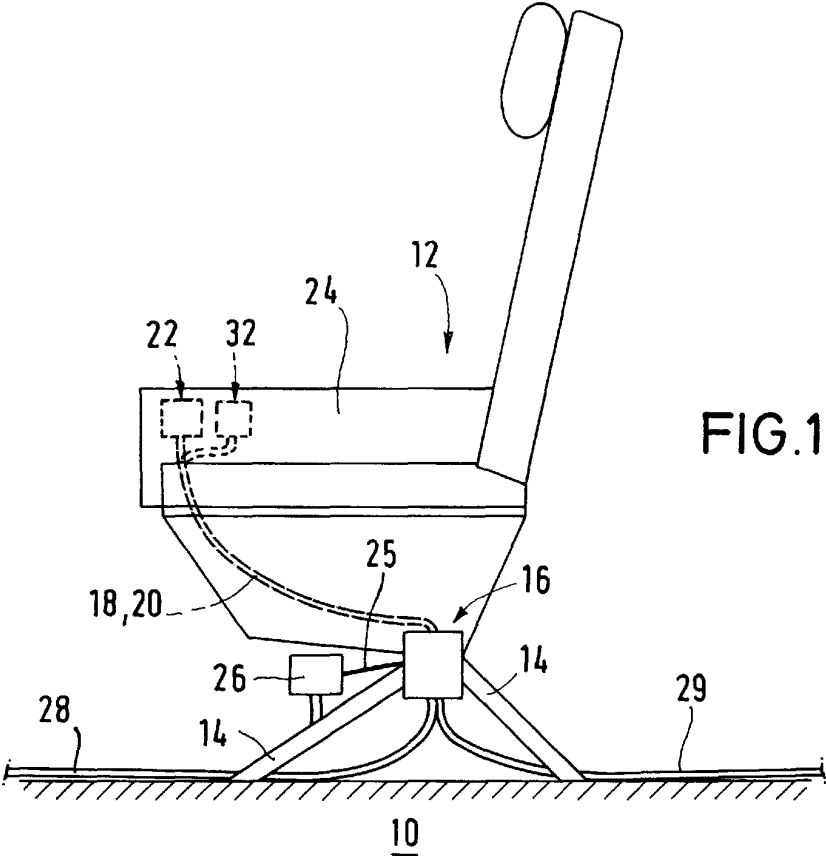
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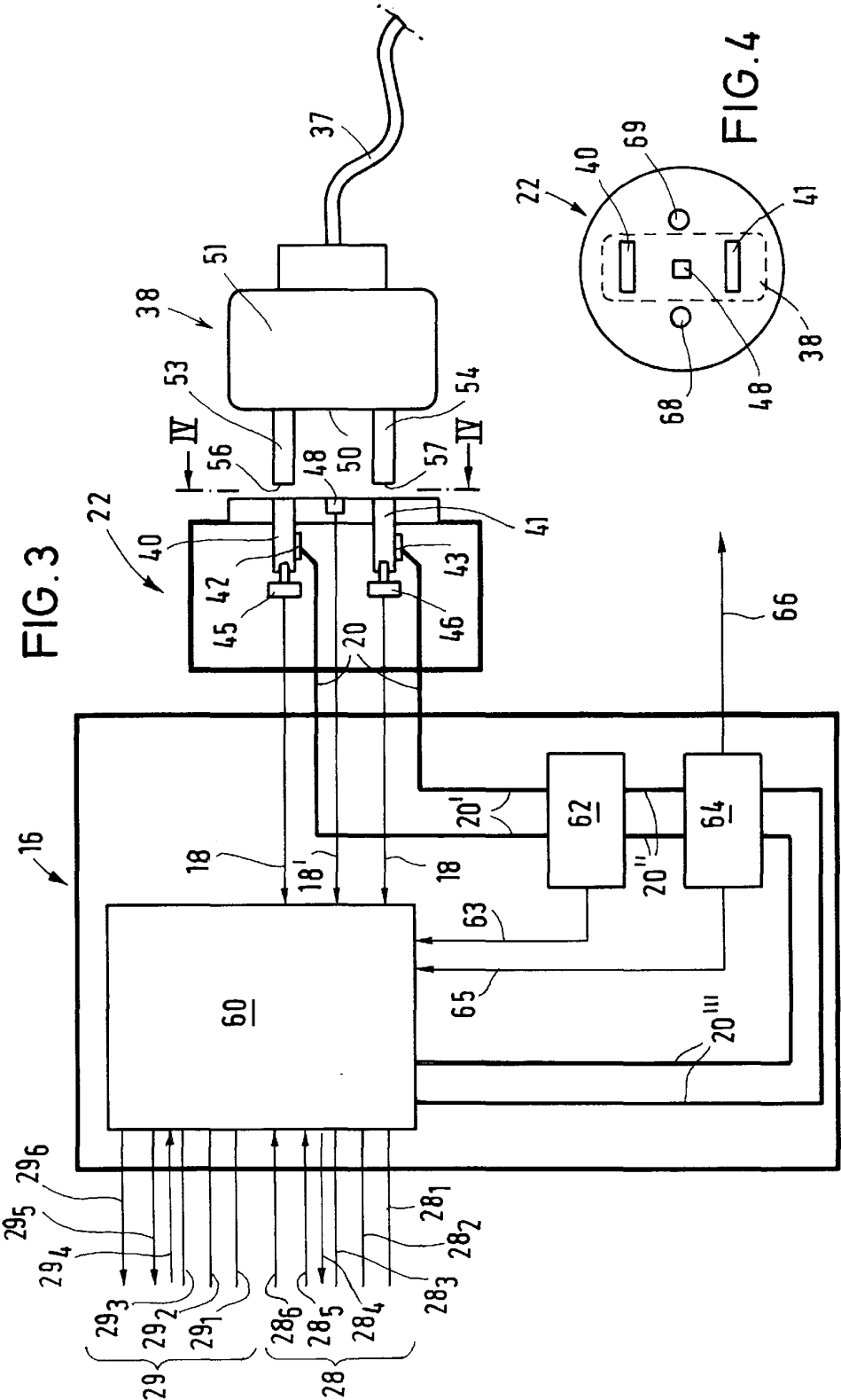
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*Primary Examiner*—Albert W. Paladini  
*Attorney, Agent, or Firm*—Diller, Ramik & Wight, PC  
[57] **ABSTRACT**

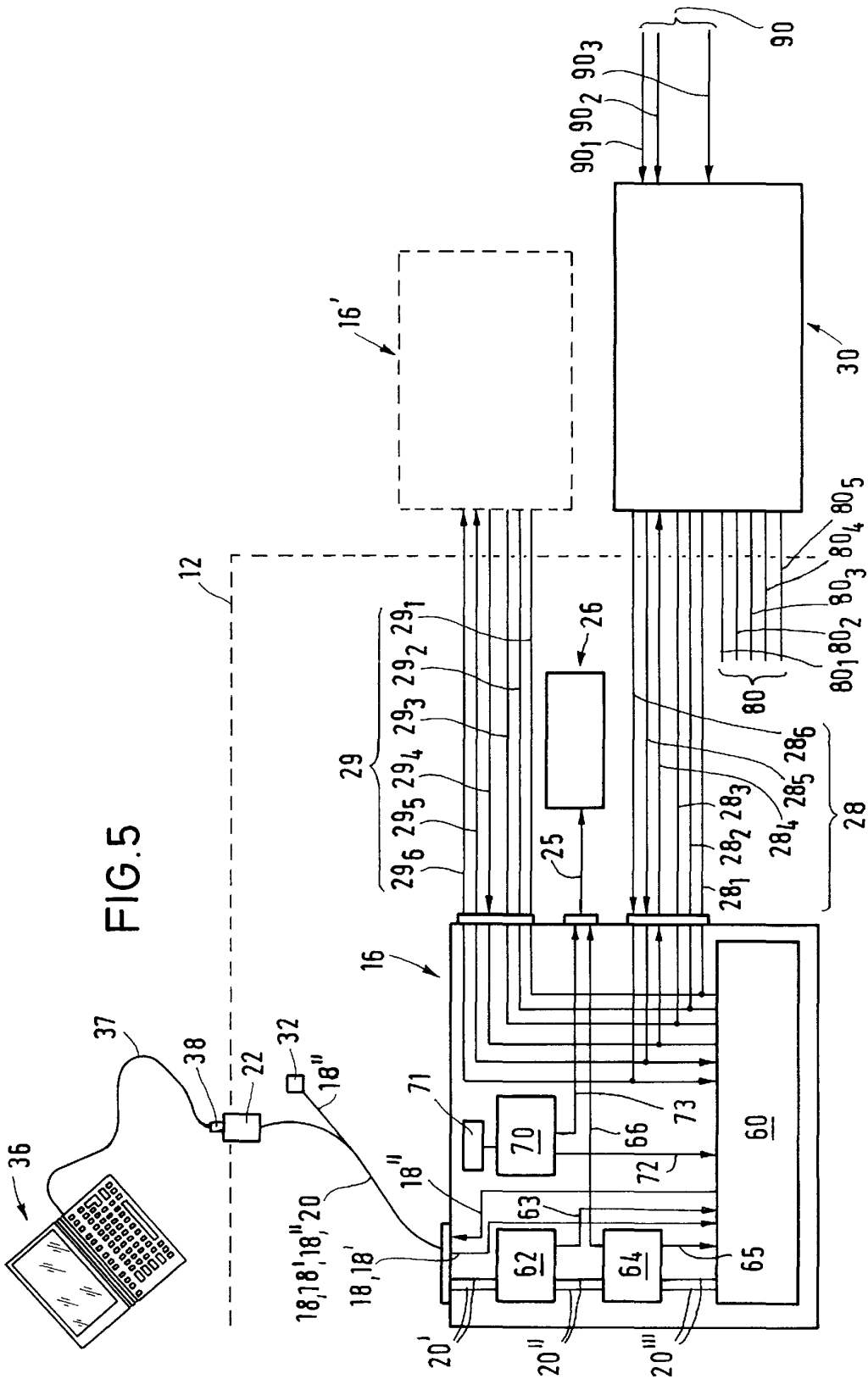
A voltage supply apparatus for providing a supply voltage for electric devices in an aeroplane cabin comprises a socket (22) to which the electric device is connectable by means of a plug (38). The socket (22) comprises plug detectors (45, 46) detecting the presence of the plug in the socket (22). A supply device (16) is arranged remotely from the socket (22) and is connected to the socket (22) via a signal line (18) and via a supply line (20) for the supply voltage. The supply device (16) applies the supply voltage to the socket (22) if the plug detectors (45, 46) indicate the presence of the plug (38) via the signal line (18) to the supply device. The supply lines (20) and the socket (22) are only alive if the insertion of a plug (38) has been detected. In this way, a danger to people due to manipulations on the socket or on the supply line is excluded.

**15 Claims, 3 Drawing Sheets**











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**VOLTAGE SUPPLY APPARATUS****BACKGROUND OF THE INVENTION**

The invention relates to a voltage supply apparatus for providing a supply voltage for electric devices in an aeroplane cabin.

Voltage supply apparatus in aeroplane cabins, as disclosed in U.S. Pat. No. 3,370,813, usually serve to provide a voltage supply to the passenger for operating electric devices, for example computers, electronic entertainment devices, chargers etc. For this purpose, sockets are arranged in the interior space of the aeroplane cabin, in most cases in the area of a passenger seat or a seating unit, into which the plug of the electric device can be inserted and by means of which the device can be connected to a supply voltage which can be applied to the plug.

In supplying and operating electric devices in an aeroplane, two safety aspects have to be taken into consideration: Firstly, the safety of the passengers has to be assured, and secondly, the electric device must not feed interferences into the electric on-board network of the aeroplane. Because of the safety of the passengers, a DC voltage of up to 30 V is provided on the socket in known voltage supply apparatus. A disadvantage of this is that not every electric device can be operated with a low DC voltage. Furthermore, special connection cables are necessary in current supplies of this kind by means of which the electric device is connected to the socket.

Known are also voltage supply apparatus providing 220/110 V mains voltage for aeroplane passengers' devices so that practically any electric device can be connected by means of its mains plug. The voltage supply is turned on and off by means of a loose-key switch on the socket, the corresponding key being supplied by the flight personnel. In this system, it is neither ensured that the passengers are free from danger from the mains voltage, nor is the aeroplane on-board network secured against interferences from the connected electric devices.

**SUMMARY OF THE INVENTION**

It is the object of the invention to provide a voltage supply for electric devices in an aeroplane cabin which improves passenger safety.

The socket comprises a plug detector detecting the presence of a plug inserted in the socket. A supply device arranged remotely from the socket is connected to the socket via a signal line and via a supply line for the supply voltage. The supply device applies the supply voltage to the socket when the plug detector signals the presence of a plug via the signal line to the supply device.

A supply voltage is only available at the socket when a plug is inserted in the socket, i. e., no supply voltage is provided on the two-pole socket as long as no plug of an electric device is inserted. This excludes a danger to people by a potentially high supply voltage in the socket when the socket is not used. Even corresponding manipulations of the socket by children by means of paper clips, knitting needles etc. and dangers arising from this can be effectively prevented. Thus, no safety concerns preclude a supply of a mains voltage to the electric devices.

By means of the separate and remote arrangement of the supply device and the socket, the supply device potentially having a mains voltage can be arranged remotely from the actual drawing location, i. e., the socket. Thereby the supply device can be arranged such as not to be a source of danger

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to the passenger. In the normal case, i. e., when the socket is not used, only a small signal voltage, but not the supply voltage, is applied to the lines between the supply device and the socket. The supply lines being arranged on the seat only provide a supply current when an electric device really is connected. In the unused state, the supply lines are free from supply voltage and do not present a source of danger to people.

Preferably, the plug detector is formed such that it detects the presence of a contact pin of the plug in the socket. In this manner, a plug inserted into the socket can be reliably detected.

Preferably, the supply device only applies the supply voltage to the socket when two contact pins of the plug are detected simultaneously. If both contact pins are detected simultaneously, it can be supposed with a high probability that no manipulation of the socket has occurred and that a plug really has been inserted. This way, an increased security against manipulation and undesired supply of the supply voltage to the socket is achieved.

In a preferred embodiment, the supply device only applies the supply voltage to the socket when a maximum time of contact between the first detection of the first and second contact pins is not exceeded. It is also checked if the two contact pins are inserted into the socket at approximately the same time. In the case of too large a difference of time between the insertion of the two contact pins, it is assumed that the socket is being manipulated. In this case, no supply voltage is applied to the socket so that a danger to a person is excluded.

In a preferred embodiment, the plug detector comprises mechanical switches being operated by the inserted contact pins. Thereby a simple and reliable detection of the contact pins is ensured.

Preferably, the plug detector is a casing detector detecting the presence of the plug casing of the plug on the socket. It is only when the plug casing is approached close enough, i. e., closer than a predetermined distance value, that the inserted plug casing is detected. This fulfils an alternative or additional criterion for the detection of the plug on the socket. The socket is secured against manipulation in a highly safe manner, and a supply voltage is only supplied when a plug casing is really present on the socket.

In a preferred embodiment, the casing detector is an optical reflection sensor detecting a minimum distance of the plug casing to the socket. The reflection sensor can be arranged such as to detect the frontal side of the plug when it is below a minimum distance to the plug casing.

Preferably, the supply device only applies the supply voltage to the socket when both the plug detector and the casing detector indicate the presence of a plug. In this manner, a manipulation, i. e., a simulation of an inserted plug, can be virtually excluded.

In a preferred embodiment, the supply apparatus comprises a line supervision detector for electromagnetic interferences of certain frequencies in electric lines of the supply apparatus. The line supervision detector is arranged in the course of the supply lines and can be combined with a line filter. The line supervision detector detects electromagnetic interferences being fed by the electric device into the supply line of the supply apparatus via the plug and the socket. Thereby interfering electric devices can be located and be turned off selectively.

The supply apparatus can also comprise a receiver detector for emitted electromagnetic interference signals of certain frequencies. By means of this receiver detector, inter-

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fering electric devices which are not fed via the socket with the supply voltage but are operated by accumulator or battery, for example, can be localized. This often applies to electronic entertainment devices and mobile phones etc., which have a high interference potential.

Preferably, the supply apparatus comprises a fault current detector outputting a corresponding electric signal if a fault current occurs. The supply apparatus can also comprise a short circuit detector detecting a short circuit and causing a current limitation. Thereby it is avoided that the current supply overloads the supply devices.

Preferably, the supply apparatus comprises a voltage switch being turned off immediately if one or several of the detectors detect an interference. Once an interference occurs which could cause danger to people or interfere with the on-board network, the current supply of the socket is interrupted.

In a preferred embodiment, the socket can be associated with a display device for displaying the state of the supply apparatus. It serves to inform the passenger about the availability of the current supply. For example, a standby signal can be displayed on the display indicating if the current is supplied to the socket or if the current supply for the socket is generally disabled.

Preferably, the socket can be formed for at least two different kinds of plugs. In this way, for example, both plugs according to the European and plugs according to the US standards can be inserted into a socket providing a mains current.

Preferably, the socket and the supply apparatus are associated to one or multiple passenger seats. Thereby a current supply is available to the passenger at their seat by means of which they can operate a computer or electronic entertainment devices.

In a preferred embodiment, a central current source is provided for the voltage supply of the supply devices, the current source being adapted to be turned off by a control signal. This control signal can be caused, for example, by the flight personnel, or automatically. Thereby it is possible to turn off all the electric devices immediately and reliably in situations in which a high security from interferences is required.

Preferably, the voltage source controls the supply devices such that only a limited number of supply devices can be used. Thereby an overload of the voltage source is prevented so that a high operational reliability for the electric devices in operation is assured.

According to an alternative aspect, the voltage supply apparatus is provided with a detector for electromagnetic interferences. If the detector indicates an electromagnetic interference, the supply device registers and signalizes the interference.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the invention will now be described in greater detail with reference to the drawings.

FIG. 1 shows a lateral view of a passenger seat with a voltage supply apparatus, including the supply device and the socket,

FIG. 2 shows the passenger seat of FIG. 1 in a top plan view, with an electric device connected thereto,

FIG. 3 shows a circuit diagram of the supply device and the socket,

FIG. 4 shows a top plan view on the frontal side of the socket, and

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FIG. 5 shows a circuit diagram of multiple supply devices with a voltage source.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1 and 2, a passenger seat 12 with a voltage supply apparatus for operating electric devices of a passenger is represented. The passenger seat 12 is located on a cabin floor 10 of an aeroplane cabin and comprises a floor frame 14 on which a supply device 16 is releasably mounted. The supply device 16 is connected to a socket 22 in the left armrest 24 of the passenger seat 12 via a signal line 18 and a double-wire supply line 20. The supply device 16 and the socket 22 are each provided in housings of their own. The supply device 16 is connected, via a further signal line 25, to a seat signaling device 26 fixedly connected to the seat 12, the seat signaling device 26 providing a permanently stored seat identification to the supply device 16. Furthermore, in the armrest, a display device 32 is mounted for displaying the operational state of the supply device 16.

The supply device 16 is connected to a central voltage source 30 supplying multiple supply devices by means of an incoming supply cable 28 introduced into the supply device 16 (see FIG. 5). The supply device 16 of a subsequent passenger seat is connected by means of an outgoing supply cable 29 leading out of the supply device 16.

In FIG. 2, as an example, a table 34 is mounted to the side of the left armrest 24 of the passenger seat 12 on which a portable computer 36 is placed as an electric device. The computer 36 comprises a mains cable 37 with a plug 38 inserted in the socket 22.

In FIG. 3, the supply device 16 is schematically represented with the socket 22 and the plug 38. The socket 22 comprises two corresponding insertion holes 40, 41 on the insides of which a respective contact element 42, 43 is arranged. The contact elements 42, 43 are provided with a mains voltage of 110 V at a mains frequency of 60 Hz by the supply device 16 via two supply lines 20 once the safety conditions described below are met. This voltage, however, can also have another value, for example 230 V at 50 Hz. Furthermore, on the bottom of each insertion hole 40, 41, microswitches 45, 46, respectively, are arranged as plug detectors, which are each connected to the supply device 16 via a signal line 18.

On the frontal side of the socket 22, an optical infrared reflection sensor 48 is arranged as a casing detector. The reflection sensor 48 comprises a light emitting diode (LED) emitting infrared radiation and a receiver diode. If the distance of the frontal side 50 of the casing 51 of the plug 38 falls below a certain minimum distance, the rays emitted by the LED are reflected by the frontal side 50 of the casing of the plug 22 and received by the receiver diode. Thus the reflection sensor 48 can detect if a plug casing 51 is present at the socket 22.

When the two contact pins 53, 54 of the plug 38 are inserted into the insertion holes 40, 41 of the socket 22, the two contact pins 53, 54 are in contact with the contact elements 42, 43. Furthermore, the free ends 56, 57 of the contact pins 53, 54 actuate the two microswitches 45, 46 so that the insertion of the contact pins 53, 54 in the socket 22 can be detected by the supply device 16 by means of the microswitches 45, 46 via the signal lines 18. The reflection sensor 48 is also connected to the supply device 16 via a signal line 18'.

In the supply device 16, a control and supervision unit 60 is provided connected to the lines of the supply cables 28,

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29. As inputs, it comprises the signal lines 18, 18' of the plug 22 as well as further signal lines 63, 65 of a short circuit detector 62 and a line supervision detector 64, which are also provided in the supply device 16.

The control and supervision unit 60 further comprises a voltage switch by means of which the supply voltage of 110 V, 60 Hz can be applied to the internal supply lines 20". The supply lines 20" connect the control and supervision unit 60 to the line supervision detector 64 connected to the short circuit detector 62 via two extension supply voltage lines 20". The output side of the short circuit detector 62 is connected to the contact elements 42, 43 of the socket 22 via two supply voltage lines 20' and via the subsequent supply lines 20.

During operation of the socket 22, i. e., when the control and supervision unit 60 has applied the supply voltage to the socket 22 via the supply lines 20, the short circuit detector 62 and the line supervision detector 64 have to perform extensive supervision tasks. On the one hand, a current limitation of the voltage supply to about 100 V is performed in the short circuit detector 62. Thereby an overload of the supply device 16 is prevented. Furthermore, when a strong overload is present, an overload signal is outputted by the short circuit detector to the control and supervision unit 60 via the signal line 63. The second function of the short circuit detector 62 is fault current detection. If the difference of the current flowing in the two current supply lines 20' exceeds a predetermined value, a corresponding signal is outputted via the signal line 63 to the control and supervision unit 60, which then turns off the current supply. Both control functions of the short circuit detector 62 thus serve to determine electric interferences caused by the electric device 36 or potential manipulations.

The line supervision detector 64 comprises a mains frequency filter filtering interference signals of high frequencies out of the supply lines 20, 20', 20". Simultaneously, the appearance of such interfering frequencies is detected by the line supervision detector 64 and indicated via the signal line 65 to the control and supervision unit 60. Especially those frequencies are filtered and detected which have to be kept free for the safe operation of an aeroplane. These frequencies are defined in the RTCA DO 160-D standard. The line supervision detector 64 thus prevents electromagnetic interference signals which are supplied from the electric device 36 of the passenger via the mains cable from being fed into the on-board network of the aeroplane.

FIG. 4 shows the insertion side of the round socket 22 with the reflection sensor 48, the two insertion holes 40, 41 for plugs according to the US plug standard and two further insertion holes 68, 69 for mains plugs according to the European standard being provided in the center. The respective insertion hole pairs 40, 41, 68, 69 are provided at a right angle from each other so that both a plug 38 according to the US standard and a plug according to the European standard cover the central area of the socket in which the reflection sensor 48 is arranged. The insertion holes 68, 69 for European plugs also comprise a contact element and a microswitch each, which are connected to the respective signal and supply lines 18, 18', 20 of the other insertion holes 40, 41. However, a second separate voltage supply of 230 V, 50 Hz can also be provided for the insertion holes 68, 69 for European plugs. Furthermore, the insertion hole pairs may also be arranged not at a right angle to each other but overlapping each other, with the microswitches then being arranged on the side of the insertion holes.

FIG. 5 shows an overall representation of an apparatus to supply voltage to electric devices. In addition to the means

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described in FIG. 3, the supply device 16 further comprises a receiver detector 70 comprising an antenna 71. By means of the receiver detector, electromagnetic waves of certain frequencies defined in the RTCA DO 160-D standard are detected. In this manner, electromagnetic interferences can be detected which are caused by mains-independent accumulator or battery operated electric devices, such as mobile phones, CD players etc.

Both the line supervision detector 64 and the receiver detector 70 are connected to the seat signaling device 26 via a respective signal line 66, 73 and via the signal line 25. The seat signaling device 26 provides a signal to a central device (or seat signaling device) via present signal lines of its own so that, if corresponding electromagnetic interferences occur, it is possible to localize the interferences by means of a display.

The control and supervision unit 60 is connected to the display device 32 in the armrest 24 via a further signal line 18". The control and supervision unit 60 outputs information signals to the display device, which informs the passenger about the status of the control and supervision unit 60. The display device comprises a red and a green LED indicating the operational status of the supply device 16: when none of the two LEDs emits light, the supply device 16 is turned off. If the red LED continuously emits light, this indicates that the supply device 16 is operating, but that no supply voltage is available at the socket 22, as, for example, the central voltage source 30 would otherwise be overloaded. The flashing red LED indicates an interference by electromagnetic waves which has been signaled either by the line supervision detector 64 or the receiver detector 70. The flashing green LED indicates that the voltage supply on the socket 22 is about to be turned off, for example after about 60 seconds. Then the user has enough time to turn off their electric device, for example the computer 36, in a controlled manner. The green LED continuously emitting light indicates the unconditional operation of the voltage supply 16.

The supply device 16 is connected to the central voltage source 30 via the frontal supply cable 28 and to a further supply device 16' of a subsequent seat via the rear supply cable 29. The six lines of the supply cables 28, 29 each comprise three lines 28<sub>1</sub>, 28<sub>2</sub>, 28<sub>3</sub>, 29<sub>1</sub>, 29<sub>2</sub>, 29<sub>3</sub> for the supply voltage of 110 V, 60 Hz and for the electric ground. Furthermore, each supply cable 28, 29 comprises three signal lines 28<sub>4</sub>, 28<sub>5</sub>, 28<sub>6</sub>, 29<sub>4</sub>, 29<sub>5</sub>, 29<sub>6</sub> by means of which analog signals are transmitted from the voltage source 30 to the supply devices 16, 16' and vice versa.

If an operational fault by electromagnetic interference signals, short circuit, fault current etc. occurs, the control and supervision unit 60 of a supply device 16, 16' outputs a signal via a control line 28, 29, which signal is received by the central voltage source 30 and processed accordingly. The voltage source 30 outputs an enabling signal to the supply devices 16, 16' via a further signal line 28<sub>5</sub>, 29<sub>5</sub> as long as a certain electric maximum load of the voltage source 30 has not been reached. If this maximum load is reached, a disabling signal is outputted to all the supply devices 16 via said signal line 28<sub>5</sub>, 29<sub>5</sub> so that no further electric devices 36 can be supplied with supply voltage by means of the supply devices 16, 16'. Only if the load returns below the maximum load by a load reduction, for example by an electric device 36 being turned off, does the voltage source 30 transmit an enabling signal via said signal lines 28<sub>5</sub>, 29<sub>5</sub> so that voltage is again available on all the supply devices 16 and can be supplied to the electric device 36.

The remaining signal lines 28<sub>6</sub>, 29<sub>6</sub> are used to provide the "fasten seat belts" signal from the central voltage source

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30 so that the supply devices 16, 16' can signal via the display devices 32 thereof, that the voltage supply is about to be turned off. This way, the user of the voltage supply can turn off their electric device connected to the voltage supply in a controlled manner.

The voltage source 30 is fed by a supply cable 80 comprising five supply lines 80<sub>1</sub>–80<sub>5</sub>. The five lines 80<sub>1</sub>–80<sub>5</sub> comprise four lines by which the typical on-board voltage of 115 V, 400 Hz is supplied, as well as a ground line. The on-board voltage of 115 V and 400 Hz is transformed by the voltage source 30 into a mains voltage of 110 V and 60 Hz and supplied to the supply lines 28<sub>1</sub>–28<sub>3</sub>, 29<sub>1</sub>–29<sub>3</sub> via a voltage switch.

Furthermore, the voltage source 30 comprises three input signal lines 90 via which the voltage source 30 can be controlled centrally. One signal line 90<sub>1</sub> is used to transmit the “fasten seat belts” signal to the voltage source 30. In the “fasten seat belts” mode, the voltage supply for the supply devices 16 is switched off after a delay of, for example, 60 seconds, which allows to switch off the connected devices in a controlled manner, to ensure a safe flight operation without interferences, for example when taking off or landing.

An emergency turn-off of the entire voltage supply apparatus can be executed via a second control line 90<sub>2</sub>. If a corresponding switch is operated and a corresponding signal is transmitted via said signal line 90<sub>2</sub> to the voltage source 30, this immediately turns off the voltage supply to all the supply devices 16.

The voltage source 30 is switched from the operational mode to the test mode via the third signal line 90<sub>3</sub>. In the test mode, which is also active after each activation of the voltage source 30, but can also be activated at any time, the entire voltage supply apparatus is tested, with the electric properties of the voltage source 30 and the connected supply devices 16 being tested. After the system test has been performed without error, the supply voltage for the supply devices 16, 16' is enabled by the voltage source 30.

After the voltage source 30 has been activated and the subsequent system test has been performed, the supply voltage is applied to the supply lines 28, 29 by a voltage switch in the voltage source 30 so that the supply voltage is supplied to all the connected supply devices 16, 16'.

When the contact pins 53, 54 of a plug 38 of an electric device 36 are inserted, the microswitches 45, 46 are activated by the inserted contact pins 40, 41. Between the first activation of the one contact switch 45 and that of the other contact switch 46, a contact time is obtained by the control and supervision unit 60. If this contact time is below a maximum value, a corresponding enabling information is stored in the control and supervision unit 60. Furthermore, the control and supervision unit 60 requests the status of the reflection sensor 48. If the plug casing 51 is close enough to the reflection sensor 48 with the frontal side 50 thereof, a corresponding signal is outputted to the control and supervision unit 60. If the reflection sensor signal and the enabling information are provided, the control and supervision unit 60 applies the supply voltage to the supply line 20 by means of an internal voltage switch so that the contact pins 53, 54 are provided with mains voltage via the contact elements 42, 43.

If such a number of many electric devices 36 are connected to the supply devices 16, 16' that a predetermined power threshold value of 3500 watts is exceeded, the voltage source 30 outputs a disabling signal to all the supply devices 16 via the responding signal line 28<sub>5</sub>, 29<sub>5</sub>, which signal causes the supply of further electric devices to be disabled.

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This disablement is correspondingly indicated by the display device 32 in the armrest 24.

In the normal case, the voltage supply for the supply devices 16, 16' is enabled by the voltage source 30 after the take-off phase of the plane. The voltage source can be turned off at a delay of 60 seconds by means of the “fasten seat belts” switch or immediately by means of an emergency turn-off switch. In the case of a “fasten seat belts” turn-off, the imminent voltage interruption is indicated by the display device 32, for example by a flashing LED, so that the user can turn off their electric device, for example a computer, in a controlled manner.

Due to the safety elements described, the voltage supply apparatus both fulfils high requirements on the safety of people from mains voltages and on the security of the on-board network from interferences from electric devices. That way, a substantial improvement of comfort and service for the passenger is achieved on a high safety level. An additional safety improvement is obtained by the possibility to detect mains-independent electric devices.

We claim:

1. A voltage supply apparatus for providing a supply voltage for an electric device comprising a socket to which an electric device is adapted to be connected by means of a plug, means for supplying supply voltage to the socket, the socket including plug detector means for detecting the presence of a plug inserted in the socket, said voltage supplying means being provided remotely from the socket and being connected to the socket by a signal line and a supply line, the voltage supplying means being constructed and arranged for applying the supply voltage to the socket when the plug detector means indicates the presence of a plug over the signal line to the voltage supplying means, the plug detector means being constructed and arranged to detect the presence of contact pins of a plug in the socket, and control means responsive to plug presence detection by said plug detector means for rendering the voltage supplying means operative to supply the supply voltage to the socket only if the time between the detection of a first contact pin and the subsequent detection of a second contact pin of the plug does not exceed a predetermined maximum time value.

2. The voltage supply apparatus as defined in claim 1 wherein the plug detector means includes mechanical switches activated by contact pins of a plug inserted into the socket.

3. The voltage supply apparatus as defined in claim 1 wherein the socket and the voltage supplying means are associated with a seat of an aircraft.

4. The voltage supply apparatus as defined in claim 1 including central voltage source means for supplying supply voltage to a plurality of voltage supply means, and said control means is constructed and arranged for cutting-off voltage of said central voltage source means.

5. The voltage supply apparatus as defined in claim 1 wherein the plug detector means includes casing detector means for detecting the presence of a plug casing of the plug at the socket.

6. The voltage supply apparatus as defined in claim 5 wherein the casing detector means is optical reflection sensor means for detecting a minimum distance of a plug casing relative to the socket.

7. The voltage supply apparatus as defined in claim 5 wherein the control means renders the voltage supplying means operative to supply the supply voltage to the socket only if both the plug detector means and the casing detector means indicate the presence of a plug.

8. The voltage supply apparatus as defined in claim 1 including line supervision detector means for detecting

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electromagnetic interferences of certain frequencies in electric lines of the apparatus to which said control means is responsive.

9. The voltage supply apparatus as defined in claim 8 including voltage switch means for turning off the voltage supply if the line supervision detector means detects certain frequencies.

10. The voltage supply apparatus as defined in claim 1 including receiver detector means for detecting electromagnetic interference signals of certain frequencies to which said control means is responsive.

11. The voltage supply apparatus as defined in claim 10 including voltage switch means for turning off the voltage supply of the receiver detector means detects electromagnetic signals of certain frequencies.

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12. The voltage supply apparatus as defined in claim 1 including fault current detector means for detecting fault current to which said control means is responsive.

13. The voltage supply apparatus as defined in claim 12 including voltage switch means for turning off the voltage supply if the fault current detector detects fault current.

14. The voltage supply apparatus as defined in claim 1 including short circuit detector means for detecting a short circuit to which said control means is responsive.

15. The voltage supply apparatus as defined in claim 14 including voltage switch means for turning off the voltage supply if the short circuit detector means detects a short circuit.

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